

ARCHITECTURAL RECORD



Eric Moss' Samitaur Building:
Revitalizing an Industrial Wasteland

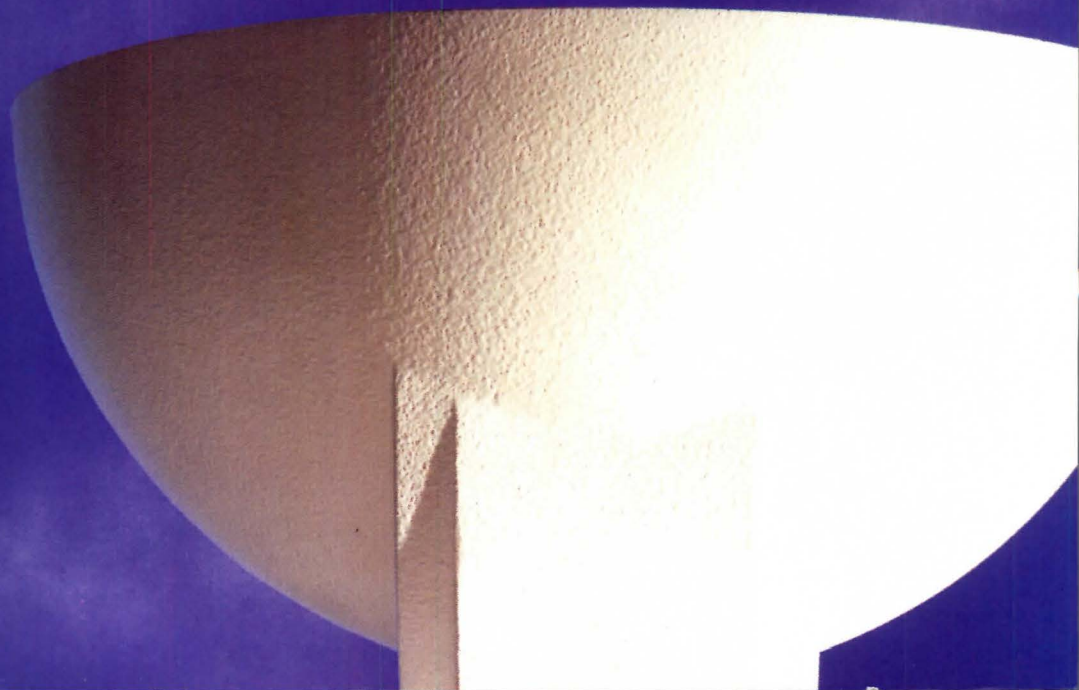
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Preservation: Library of Congress
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*Margo Grant Walsh, IIDA, Vice Chairman
Managing Principal, Gensler, New York*

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1. New expanded multiline text object has automatic word wrap and flexible text alignment.
2. Easy to change the style attributes of individual text characters such as color, height, obliquing angle.
3. New text style dialog (DDSTYLE) gives more access to create, edit, and set text styles.
4. Easier to underline and overscore text.
5. Easier to edit text with integrated, dialog-based text editor.
6. Cut, copy and paste in the MTEXT editor.
7. Object grips can be used to modify the width of paragraphs.
8. AutoCAD text now supports True-Type and PostScript® Type I fonts.
9. Spell Checker includes standard and custom dictionaries.
22. You can suppress the first or second dimension line.
23. Baseline and Continue dimensioning have been streamlined.
24. Baseline and Continue dimensioning work on angular dimensions.
25. DDIM dialog box allows preview prior to input and improves access to properties.
26. Dimensioning better follows industry and international standards, including ANSI, ISO, and JIS.
27. Dimension styles are more flexible and easier to create.
28. Override feature allows you to change properties on a per-dimension basis.
29. Geometric tolerancing creates and edits tolerance control frames automatically.
43. The ability to create and use custom linetypes with text and shapes.
44. Assign linetype scale factors per object (versus per drawing).
45. ISO Compliance of linetypes.
46. DDMODIFY has been dramatically improved.
47. Direct Distance Entry eliminates laborious coordinate keyboard entry; allows you to move the mouse in desired direction and enter a single distance value.
48. Object snap now snaps to extended intersections.
49. Running object snap dialog box is now transparent.
50. New Apparent Intersection snaps to display intersections regardless of the object's UCS.
63. Boundary edges don't need to physically cross the objects you wish to Extend.
64. Grab all visible objects as boundary edges by hitting enter at the first EXTEND prompt.
65. Lengthen or shorten a line or arc to a specific length with the new LENGTHEN command.
66. New overlay option in the Xref command avoids circular references.
67. The Xref command now searches the AutoCAD path to find referenced drawings.
68. Purge your drawing at any time.
69. Easy to create construction lines that extend infinitely in both directions (XLINE).
70. Easy to create construction lines that extend infinitely in one direction (RAY).
85. Solid profiling commands allow you to convert 3D to 2D (SOLPROF/SOLDRAW/SOLVIEW).
86. Create regions.
87. Extrude along a path curve.
88. Determine mass properties of a model.
89. Fillet and chamfer solids.
90. Faster solid model processor and smaller model sizes than AME.®
91. Control the display of tessellation lines (isolines).
92. Import and export ACIS files.
93. Translate AME models into R13 solids.
94. Rendering is faster and easier.
95. New colored spotlights.
96. Phong shading supports highlights from colored light source.
97. Material Library and Editor included.

For all those who have "Can AutoCAD Release 13 really make

10. Easily import a TXT file.
11. Create stacked fractions for better readability.
12. Single-line MTEXT editor for DOS users.
13. Map slower fonts to faster ones (FONTMAP).
14. Fill in text fonts (TEXTFILL).
15. Font Substitution during file open simplifies drawing transfer and font changes (FONTALT).
16. Move, rotate, erase, copy, mirror, stretch, or scale each text object.
17. Automatically stack fractions in dimensions.
18. Inferred linear dimensioning automatically distinguishes between horizontal and vertical dimensions and repositions text.
19. Creating dimensions requires fewer steps.
20. Dimension Style Families allow you to define dimension type differences within one dimension style.
21. Continued dimensioning works on ordinate dimensions.
30. Easier to modify dimensions.
31. Dimensioning has its own units settings.
32. Create splined leader lines.
33. Create multiple lines of text in leaders.
34. Automatic island detection finds a complete boundary with one pick.
35. Associative hatching automatically updates hatch to modified boundaries.
36. The restructured BHatch dialog box is simpler and faster to use.
37. Drive the BHATCH command from the command prompt if desired to run scripts.
38. Create a hatch boundary manually on the fly.
39. Easily edit hatch properties without redrafting the hatch.
40. New ISO compliant hatch patterns included.
41. Load linetypes from within the Layer dialog box.
42. Visual representation of linetypes for selection before loading.
51. New FROM object snap can reference a point from within a command.
52. Object Cycling insures that you select the correct object every time.
53. Improved Fillet command can be used to cap parallel lines.
54. Fillet between a line and a polyline.
55. Fillet without trimming the existing geometry.
56. Fillet that doesn't cancel when you miss the object.
57. Chamfer by length and angle.
58. Chamfer without trimming the existing geometry.
59. UCS restrictions are gone for fillet and chamfer commands.
60. Trim using cutting edges that don't physically cross the objects to trim (implied edge).
61. Cutting edges don't need to be on the same UCS as the objects you're trimming.
62. Grab all visible objects as cutting edges by hitting enter at the first TRIM prompt (two less steps).
71. Group objects together by name with object grouping (GROUP).
72. Draw multiple parallel lines using a variety of linetypes and colors (MLINE).
73. Intersection clean-up for multiple parallel lines simplifies wall creation.
74. Save multiple MLINE styles for quick access.
75. Fill in parallel lines with a different color (MLINE).
76. True geometric Ellipses.
77. Snap to the center or quadrants of an ellipse.
78. Create elliptical arcs.
79. Create NURB splines.
80. Specific editing commands for greater control of new splines.
81. Explode blocks with varying X and Y scale factors.
82. Solid modeling included in base AutoCAD.
83. Create ACIS solids with solid primitives.
84. Perform Boolean operations on solids and regions (union, intersect, subtract).
98. Assign materials for shading by layer.
99. Import and export 3DS files.
100. Render to file with image only; supports over a dozen new file formats.
101. Windows standard GUI.
102. Standard Toolbar contains icons for high-usage drawing management and drawing editor navigation functions.
103. Easy to create and modify custom toolbars.
104. Toolbars can float or be docked.
105. Object Properties Toolbar offers quick access to layer, color and linetype functions.
106. Easy to understand icons with tool tips.
107. Drag and drop toolbar editing.
108. Preview drawings before opening to speed up identification and avoid opening the wrong file.
109. See a visual representation of WBLOCKS before you insert them.

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- 110. Customize your keyboard with Accelerator keys.
- 111. Toolbar flyouts included.
- 112. Most frequently used toolbar buttons float to the top of the flyout.
- 113. Scroll bars permit easy panning.
- 114. Improved user feedback on standard status bar.
- 115. Can turn tilemode on and off at the status bar.
- 116. Updated tablet menu.
- 117. Merge your custom menu into the existing AutoCAD menu with partial menu loading.
- 118. Set a new current layer quickly from layer control feature of the Object Properties Toolbar.
- 119. Freeze, thaw, turn on or off layers quickly from the layer control feature of the Object Properties Toolbar.

- 134. On-line What's New shows overview of new features in Release 13.
- 135. Cue Cards walk you through basic CAD operations.
- 136. CD-ROM installation is faster, easier.
- 137. Multiplatform license includes DOS, Windows 3.1x, Windows NT and Windows 95
- 138. Typical, Custom or Minimum install options.
- 139. Configuration files are now portable and ASCII.
- 140. No more ACAD.PWD file.
- 141. The ability to turn off the automatic Backup files.
- 142. Improved control over memory management.
- 143. OLE 2.0 with drag and drop allows you to dynamically embed spreadsheets, video clips, Word documents into

- 154. Optimized for 32-bit Windows operating environments, resulting in 20%+ increase in performance over 16-bit Windows 3.1x.
- 155. WHIP driver (High Performance Driver for Windows) increases performance, including near instantaneous redraws.
- 156. Real-time Pan.
- 157. Real-time Zoom.
- 158. Incremental saving of the drawing file.
- 159. Faster regens due to more drawing data stored in memory during working session.
- 160. No regen on Window resize.
- 161. Optimized output on selected Windows system printer drivers.
- 162. Improved HP GL/2 plotting performance on Windows and DOS platforms.

We understand. You may not have the time to read them all. But, suffice it to say that we



have added scores of new features to AutoCAD® Release 13 to make your

life on the job easier and less labor intensive than ever before.

Case in point: Release 13 was designed for both Windows 95® and Windows NT,™ letting you leverage your knowledge of Windows and giving



you access to the features you use the most. In fact, R13 on Windows 95 and Windows NT lets you work 20% faster than

been asking the question, "my life easier?," we offer 176 yes's.

- 120. Command prompt is now a moveable, resizeable and scrollable window.
- 121. Copy the command history to the clipboard.
- 122. AutoCAD has added a search engine to find drawing files.
- 123. Aerial viewer has been improved and is more user friendly.
- 124. Don't have to reload menu with each drawing load.
- 125. Contains a simple to use, on the fly icon editor.
- 126. Regular and full menus offered.
- 127. Ability to retain Release 12 screen menu and command line layout to ease learning transition.
- 128. Full on-line documentation available on CD-ROM.
- 129. Task-oriented documentation.
- 130. Improved on-line Help.
- 131. On-line command reference.
- 132. On-line Tutorial steps through basic features.
- 133. On-line Quick Tour shows AutoCAD's capabilities.

- AutoCAD drawings (or AutoCAD drawings into a Word document).
- 144. AutoCAD SQL Environment (ASE) allows access to data from external database management systems, including SQL2, ODBC 2.0, Informix (DOS), Oracle (Win 3.1/NT).
- 145. Read drawing files created in previous AutoCAD releases.
- 146. Save as a Release 12 drawing file.
- 147. ARX (object-oriented development platform) allows for tighter integration with 3rd party software.
- 148. Broad peripheral support.
- 149. Undo support for external database links and operations.
- 150. Output to STL format.
- 151. Xref and Block support for non-graphic links.
- 152. ASI access to ASE link mechanism.
- 153. ASILISP contains new LISP functions for accessing external databases.

- 163. ADS applications run faster.
- 164. AutoLISP programs run faster.
- 165. Pager included for large drawing memory management.
- 166. Multiple sessions of AutoCAD.
- 167. Windows 95 user interface.
- 168. Support for Long Filenames.
- 169. Supports Universal Naming Convention (UNC) for Files and External References.*
- 170. Supports UNC for configuration files.*
- 171. Uninstall from Windows 95 or NT through the control panel.*
- 172. Email enabled for MAPI compliant programs allows users to attach DWG files to an email.*
- 173. DOS, Windows 3.1x, Windows NT 3.51, Windows 95.
- 174. Windows NT on Alpha Systems.
- 175. UNIX:® Sun® Solaris,® HP-UX,® SGI IRIX,™ IBM-AIX.®
- 176. Ability to generate .DWF files and make your drawings available over the Internet.

if you were working on Windows® 3.1x.

Release 13 also supports AutoCAD Runtime



Extension (ARX) applications

from developers like KETIV Technologies, Inc., ARCHIBUS, Inc., and Softdesk, Inc. These next generation tools use the object-oriented database in R13 to provide you with a seamless and associative design environment. Plus, R13 has Internet



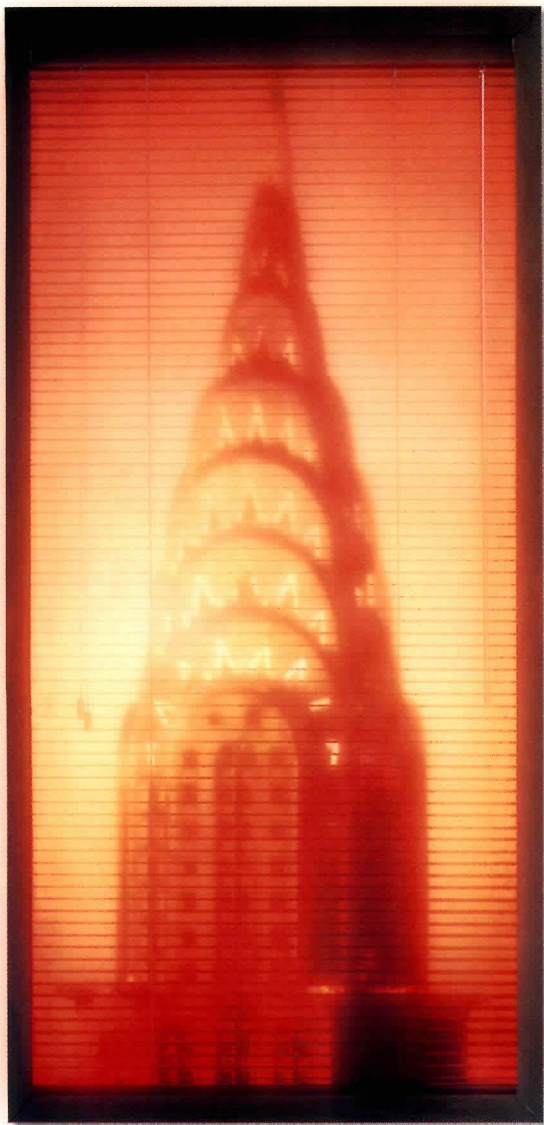
support, so now you can view, send, and share design content over the Internet.

So look into award-winning AutoCAD Release 13 software. Hundreds of thousands are already enjoying its 176 new features. How many more reasons do you need?

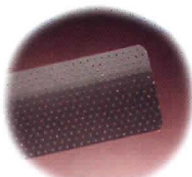


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CIRCLE 8 ON INQUIRY CARD



EDITORIAL:

Part of Who We Are

— ROBERT A. IVY, FAIA

Who among us hasn't stood quietly in an adobe church and grazed a hand along the wall to feel the stubble and the grit? Who hasn't squinted at the razor-thin mortar joints in Boston's Beacon Hill and marveled at the precision of early craftsmen? Who hasn't stood by the harbor in Newport and turned to catch the sunlight on a church spire and known—this is what it was like; this is part of who I am.

Buildings are rooted in time and place, three-dimensional messages from other eras, speaking through form and texture. Building preservation concerns authenticity, of allowing the reality of earlier moments to resonate through, unalloyed, to the present.

In architecture, the historic preservation movement has served as guardian and champion of authentic experience in a culture hell-bent on reinventing itself, sometimes in spite of architects, engineers, contractors, and developers. No more. Kermit Baker, the AIA's chief economist, estimates that work on existing buildings, excluding maintenance, now hovers between 50 and 60 percent of all construction volume. Historic preservation is big business.

The preservation crowd has changed. No longer limited to the social register, preservation now counts average citizens, communities, and governments as spirited advocates. Peter Brink, a vice president of the National Trust for Historic Preservation, describes how the Trust's Main Street Program, which has galvanized entire small towns toward self-awareness and improvement, is broadening its work into inner city neighborhoods. The Trust's Honor Awards program now regularly mentions groups such as New Orleans' Coliseum Square Association, an effective neighborhood re-launched into health by its residents, or the Chicago Bee Building, converted to a branch library in the Black Metropolis Historic District.

Perhaps no change in preservation is more encouraging than its adoption by minority populations, including the African-American community. There is real news to report: consider Baltimore, where we report

on the conversion of a former African Methodist Episcopal Church into headquarters for the local Urban League; or Nantucket, Mass., where local residents recently restored a meetinghouse for free blacks built in the 1820's. History, whether heroic or mundane, comes alive when placed in the context of a meeting room. It jumps off the page when you can see where real people expended their passions and lived their lives.

Strong forces still threaten valuable properties, however. Sometimes, local economic or social pressures demand outside intervention. While architects often blanch at the thought of additional layers of red tape, government has proved an effective ally. In the United States, federal programs like ISTEA (the Intermodal Surface Transportation Efficiency Act) are helping revitalize historic depots and other structures as the nexus of 21st century urban transportation. The same story is occurring internationally: Cuba, as we report in this issue, treasures its buildings as invaluable to defining national character.

Preservation needn't stifle creativity and it does not imply being mired in the past. It can, in fact, provide a framework for original additions or spirited interiors, proposing a richer present and an informed future—cities with older landmarks pulsing with new life, neighborhoods that ground us and let us grow, new buildings that fit into a whole. Preservation is an action.

LETTERS

The New RECORD

I perused the new January issue with more than usual interest and found it meaty. I had the satisfying feeling that the feature subjects were all eminently worthy of the attention they got (a feeling that isn't very frequent, as I'm sure you will agree). Now the quibbles. (And whoever writes to the editor except to quibble?) At the beginning of the [Michael] Sorkin piece [January, pages 84-97] he cites some statistics to show that Phoenix's area grew more rapidly than its population, but his figures show a 10-times growth in population and only a 3.8-times growth in area. Am I missing something? Later on, he refers to Paradise Valley as "the city's self-designated soubriquet," but Paradise Valley is actually a separate municipality in the area. (Does he think Yonkers is actually a soubriquet for New York?) He does say convincing things about the buildings, which is after all the ultimate point. I can't wait to see some of them.

—John Morris Dixon, FAIA
Editor-in-Chief, ArchitectREACH
Stamford, Conn.

I enjoyed the new RECORD premier issue very much. As a participant in your San Francisco focus group, I am impressed that you were able to implement so many of the group's comments.

The new issue has just about everything we requested in a professional journal: brief news items; in-depth project evaluation, including a product/material section; criticism; and nice photography. The features on CAD and professional practice are useful and informative, and the three opportunities to obtain continuing education units will be helpful.

In short, if you keep this up, I'll actually read the magazine instead of flipping through to read the captions and glance at pictures.

I used to pretty much get through an issue at lunch time, but

this issue is going to be carried around in my briefcase for a while as there is much to read. I am excited to have a useful and compelling professional journal at last, and will look forward to the next month's issue. The only thing I'd keep on my list of requests is to see more large-scale construction sections and details.

—Tom Hardy
San Francisco

I've just read, with some considerable pleasure, the article by Michael Sorkin on Phoenix and its new Art Museum addition. His comments, although occasionally betraying the brevity of his encounter with our extraordinary metropolis, are nonetheless perceptive and generous.

I am, however, less happy that he did not dig deeper to discover why "Suddenly Phoenix has become a showcase for medium-scale modern architecture," nor mention that the parade is not yet over, for Richard Meier's Federal Courthouse promises to up the scale a little more, and the new Science Center by Predock is due to open in April.

We would not claim sole responsibility for the quality of this work, but there is a common denominator, which is this College [of Architecture] and its members. We have been involved both during architect selection and design-development in all of these projects and, on several, have been advisors to the clients from the earliest stages.

This is an important role for colleges and schools of architecture, and where they have been able to fulfill it, as in Cincinnati and here in Phoenix, the results are spectacular.

Our communities turn to the universities for judgement and expertise in many fields. When there is evidence that architecture has benefitted from that relationship, it might be worth celebrating.

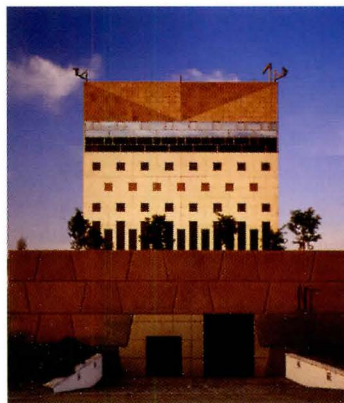
—John Meunier, dean
College of Architecture
Arizona State University
Tempe, Ariz.

The inaugural issue of the new ARCHITECTURAL RECORD came up short in its lead article, Holl's Housing Project [January 1997, pages 65-71].

You devoted thirteen pages to this project with some conceptual site and massing studies and numerous trendy photographs of building facades. There was not a single floor plan of the apartments or the buildings, nor was there a discussion of apartment living arrangements unique to the Japanese culture.

Are the people who live in this complex totally irrelevant?

—Ulrich Franzen, FAIA
New York City



Bad will in Peru revisited

Cynthia Richardson's negative reaction to the new United States Embassy in Peru [ARCHITECTURAL RECORD December 1996, page 145] is especially appropriate when we consider the Peruvians' prevalent and enduring view of the United States presence in Latin America. They see us as the overbearing, bullying and insensitive "gringos" or "ugly Americans." In this light, the image of the Embassy as a domineering, garish, and non-contextual monolith could not have been a worse choice.

"There is a moment when you decide there are no apologies," says the architect. Why? Are we "just following orders?"

—Rudy Schwarz
Rudy Schwarz Architects
University City, Mo.

More "Boldness Gap" comments

Robert Campbell is right when he says that present American design is visionless [RECORD, November 1996, pages 76-78]. In visits to the U.S., all my partner and I see are commercial malls and the same boring housing plans. We think the architect's nature is to be creative. Critics might not like your work, but you need to be inventive and free. Architecture also has to be related to your social and cultural world.

—Arturo Calderon Zugasi
Ezquerria & Associates International
Mexico City, Mexico

In his opinion piece in the November issue, Robert Campbell talks of the bold, intense and daring architecture in other countries and quotes American architects who prefer foreign clients because foreign clients never question design. These architects feel their work should never be challenged; it is sacred territory. This is precisely the attitude that has given the architectural profession a reputation for snobbery and elitism. When architects are more concerned with protecting their hallowed ground than designing buildings that are profitable and easy to use, it is no wonder clients are fed up with us.

When a desire to create something grand that will win awards takes precedence over meeting a client's needs—when form prevails over function—we have done our clients a disservice and have brought shame to our profession.

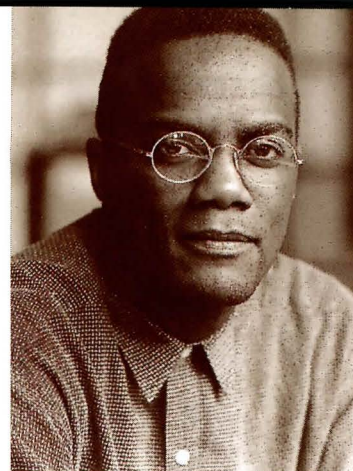
A better indication of architecture's contribution to society is in the amount of repeat business a firm generates. Clients who find a building difficult to use are unlikely to choose the same architect again. If it doesn't work, it doesn't matter how many awards it's won.

—Cathy Rodgers
Communications Specialist
Earl Swensson Associates
Memphis, Tenn.

RECORD may edit letters for style, grammar, and fit, taking care not to alter the author's meaning.

SPEAK OUT: Mentoring in Harlem:

“I try to give them the whole truth of my experience...” — BY JACK TRAVIS



Jack Travis founded JTA, an architecture, space planning, and interiors firm in 1985. Previously he had worked for Skidmore, Owings & Merrill, Switzer Group Inc., and Sidney Philip Gilbert Associates. His clients include Spike Lee, Wesley Snipes, and NBC.

Five years ago, I made the decision to live and work in Harlem. That decision was, in part, a way of renewing my commitment to serving people in need, the commitment that first guided me into the profession of architecture.

For me, the practice of architecture has always been coupled with the necessity to teach. Growing up in Las Vegas, I saw few architects in my community who could serve as role models. In 1985, I opened my own office, and six years later, I founded the Studio for Afro-Culturalism in Architecture & Design, a non-profit organization, for the purpose of gathering and disseminating information on black culture as it relates to our profession and practice. It was at that time that the importance of working and teaching in a black community became paramount to me.

My private practice has grown considerably in the last few years, servicing clients—increasingly African-American and mostly residential. At present, we are reorganizing to broaden the scope of our work. The Studio and its potential are just as important.

Coming home to Harlem has been a bittersweet experience. She is a community where resources, infrastructure, and purpose are remote commodities for far too many of her residents. Embracing this community as home carries with it the bitter reality of an environment in decay, of vandalism, of “trains” of unemployed men and women derailed on urban streets.

The basic services in Harlem—police, fire, medical, construction,

maintenance—are administered mostly by people who do not reside in the community. Retail businesses, land ownership, and real-estate development are also largely in the hands of others.

The children of Harlem perceive this phenomenon. They learn that there is no other group, except perhaps for Native Americans, so controlled by outsiders. The children can thus imagine the sober reality of their own potential under such conditions. Many, at an early age, succumb to the destructive pressures around them.

What keeps me optimistic is the beauty of spirit and the strength of character of so many of the leaders and builders who work to keep this community vital. And, in part, because of them, there are children who do have a sense of purpose.

When I represent my profession in classrooms, I tell them that as a black architect, there is never a dull day in my life. Every day there is so much to do and so much that must be done for the African-American community. I try to give them the whole truth of my experience and all of the varied emotions I feel about being an architect here in Harlem, now.

Our goal is to increase the environmental awareness of young people and show them that they are capable of effecting change. To this end, the Studio offers three mentorship programs.

The first is a six-week Student Summer Workshop, open to high school, undergraduate, and graduate students, focusing on design issues involving the black commu-

nity. Some of the project types we've examined include a marketplace, a place of worship, an outdoor educational and cultural center, a reading room dedicated to James Baldwin, and a plan for an African village in Harlem.

In program two, architects involved in the Studio make twice-monthly visits to classrooms, where we introduce the importance of creating and imaging. Pupils are challenged to research cultural and architectural information so they can design their own bedrooms, build a retirement home for their parents, or conceive monuments for inspiration in their neighborhood.

The third program is our open door policy, whereby students with talent in architecture can meet people in the office environment. Our emphasis is on how creativity and economic reality coexist.

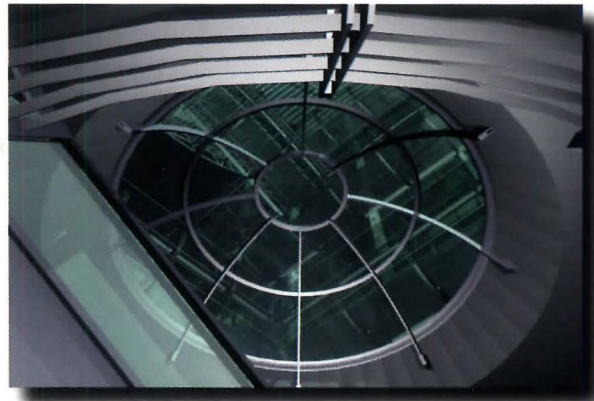
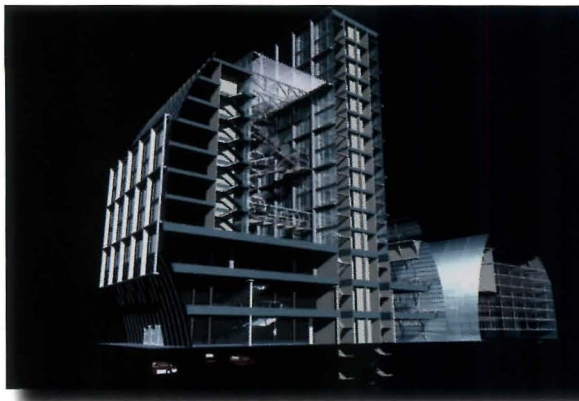
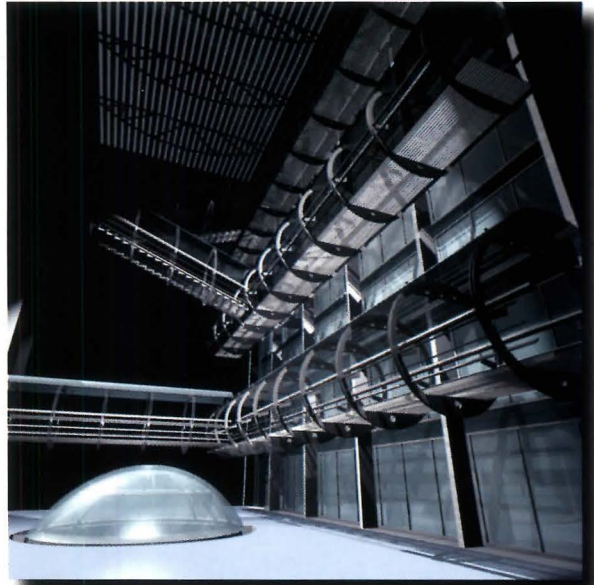
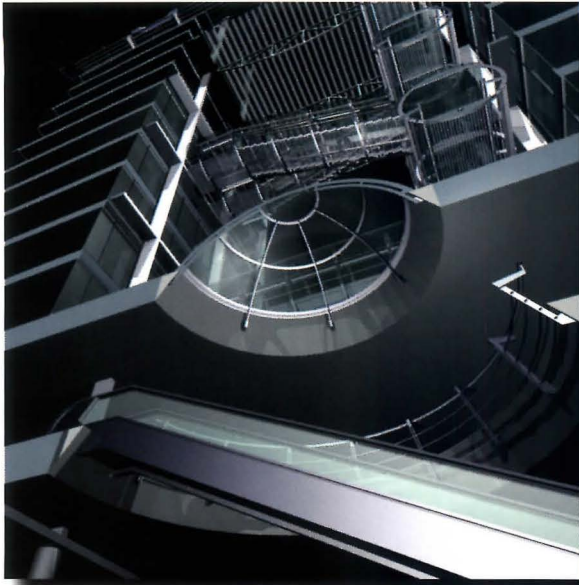
I still feel I am at the beginning of my return to Harlem. The first job was to establish my firm. Helping to tap the community's assets in order to nurture our young minds is the next step. Our greatest resources still remain the children. ■

Contributions:

If you would like to express your opinion in this column, send submissions: by mail (with a disk, if possible) to Speak Out, ARCHITECTURAL RECORD, 1221 Avenue of the Americas, New York, N.Y. 10020; fax 212/5124256; mail: rivy@mcgraw-hill.com. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive final text approval.

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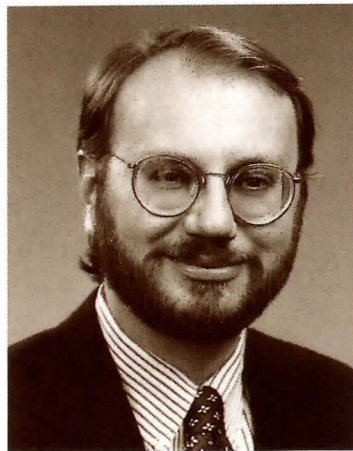
CIRCLE 13 ON INQUIRY CARD



MENTORS: After architectural partners split, what is next for the sole proprietor? Plus, what to do about product knockoffs.

Mark Zweig is president of Zweig White & Associates, Inc. in Natick, Mass. He consults to top management in A/E/P firms throughout the United States in strategic planning, turnarounds, organization restructuring, mergers and acquisitions, marketing, operations, finance, and human resources.

Sally Sirkin Lewis, a designer, is president and CEO of J. Robert Scott, Inc. in Los Angeles, a member of the Design Hall of Fame, and chairman of the Foundation for Design Integrity.



After spending 15 years building a large, successful partnership, my partner and I split. At the age of 50 I find myself as a sole proprietor of a 23-person firm. I am now considering making three of my associates partners. What advice do you have?
—*unsigned*

Mark Zweig responds: Start the transition process immediately. Accept the fact that it's okay that no one single individual will be a clone of yourself. Educate your staff on the business aspects of the practice by tracking key firm-performance indicators, summarizing and interpreting these in a one- to two-page monthly memo, and sharing it all with every employee.

Develop a buy-sell agreement with a valuation formula that ties stock value either entirely or largely to the firm's net revenue (gross billings less subs and reimbursables). Begin selling stock out of the treasury (about 3-5 percent each) to the three best people, but tell them that being an owner does not mean you will all make every decision jointly (a common problem in A/E firms!), nor does it mean they have guaranteed lifetime employment.

Allow them to finance their purchase over three to five years at a reasonable interest rate and pay for it through payroll deduction. Pay profits to owners monthly, separate from your "regular" bonus pool, in accordance with their share of ownership (S-corp status helps here) so there's a reason to buy more. Tie stock buy-back terms to how the

shareholder leaves the firm. Do what's necessary to grow the firm by 15 percent or more each year, and pay out about 10 percent of the value (per the buy-sell agreement) annually in the form of S-distributions or additional owner compensation.

As the firm grows, part with the tasks you don't want to do, add more shareholders, and make sure that they understand that they won't all become corporate managers just because they are owners.

I have a recurring problem in that I have many clients asking me to select furniture, fixtures, or fabrics which look like or imitate well-known designs, but cost far less than the known item or fabric. In fact, they are requesting that I select a "knockoff".
—*unsigned*

Sally Sirkin Lewis responds: I believe this can be turned into a positive situation. You must explain to your client that it is important for you as a professional to maintain your ethical standards and integrity in the industry. Being a knowledgeable designer, it is imperative that you do your homework, and it should therefore be easy for you to specify any number of companies who produce furniture or textiles which not only fit the design parameters, but the client's budget as well. If it is furniture that you are selecting, you can also suggest to the client that you request the original manufacturer's quote on doing a less expensive piece.

In the event you are writing specifications for a large project, as the designer you can specify "no known equal." In the event it becomes necessary for a substitution to be made, you can note on the original written specifications that any new substitutions must be made by the designer of record. If you are intent upon maintaining the integrity of your design, then you can control its destiny.

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design and construction, send submissions: by mail to Mentors, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; fax 212/512-4256; or e-mail: rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*

PULSE: RECORD readers were asked: Has American architecture lost its boldness?

YES: 84%

NO: 16%

Yes: "I think one of the key issues here is why architects have such a weak position in our culture. The government, corporate America, and the general public all seem out to stymie, or at least dilute, the clear visions of good architects. As Robert Campbell described one of Rafael Moneo's recent client relationships as 'enlightening,' he rightly responded, 'architects in the U.S. would kill for that kind of standing.' A general lack of appreciation for the arts, quality in design of everyday objects, and obliviousness to our physical environment are problems that are far too prevalent in American society.... Better education of all Americans in matters of design and environment would help. Unfortunately our public schools are forever cutting out arts education and our government is forever decreasing the budget for arts orga-

nizations.... Amidst all of this morbid news, I have hope for the future. As the '90s mature, architecture seems to be moving beyond the many fad styles such as Post-Modernism and Deconstructivism. There is a heightened awareness of the environment and sustainable building. The world is also getting smaller. More people are traveling, or at least being exposed through television and the internet, to European and Asian cities where other ways of doing things are presented.... Of course, we architects have one of the biggest responsibilities of all: As Ernest Boyer and Lee Mitgang recently recommended in their 'Building Community: A New Future for Architectural Education and Practice,' the Carnegie Report, 'architects and architectural educators...ought to be among the most vocal and knowledgeable leaders in

preserving and beautifying a world whose resources are in jeopardy.' In other words, we architects need to be bold, educate, and practice what we preach!"

—Mary Ellen Lynch Comisso,
Long Island City, New York

Yes: "Americans are the most creative and innovative in all fields except architecture. We as architects have lessened our role through 'partnering' in the building environment. The resultant consensus and compromise produces architecture of expediency, economy, and pandering to popular (uneducated) design by committee. 'Too many chefs spoil the....'"

Rodney F. Coles, AIA
Salt Lake City, Utah

No: What is boldness? Lucy the Elephant in Margate, N.J. is one example; so is the Oscar Meyer Weiner car. They've been around a long, long time, but they don't function. I look at the boldness and the incredible beauty of the stuff Frank Lloyd Wright did, but you couldn't live in it. But the boldness was able to maneuver U.S. architecture into a new era. Same with some of Louis Kahn's work. It was bold, but not all of it functioned well.

American architecture doesn't lack boldness, it lacks brains. Architects think about how great their artistic ability is, not what the person in the street is going to be comfortable with and what's going to invite them in. And there are some wonderful, great architects out there. But the egos...

—N. Joel Clary,
Southern Pines, N.C.

This Month's Question:

Does design review in historic districts restrict creativity?

When architects work in historic districts such as New Orleans' French Quarter or New York City's Greenwich Village, they face a demanding agenda. Local zoning often dictates guidelines for new construction and alterations, not to mention a stringent review process.

Do you think these safeguards in historic districts restrict creativity?

Yes No

Let us know your opinion:

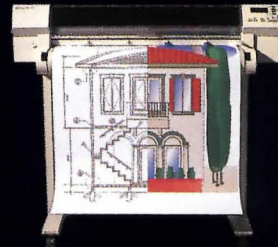
May an editor contact you for further comments? Yes No

Name

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Technical
Fundamentals
1. Types of Copper and Properties
The copper most commonly used in applications complies with ASTM F1103 of 99.9 percent copper, and is available in two tempers: soft and cold rolled.
Soft temper copper is extensively used in applications such as interior wall cladding, roofing, and gutters.

Details
Basic Details
CLEAR @ 12" OC
NARROW LAP JOINT — TRANSVERSE

Details
Roofing Systems
A. Gable Rake

Copper in Architecture
Table of Contents
Introduction
1 Technical
Fundamentals.....
Finishes.....
Copper Alloys.....
Rehabilitation of Copper.....
Index of Technical Reports.....
2 Installation
Installation Equipment and Tools.....
Video and Film Library Index.....

Copper in Architecture

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story on copper... and specifications.

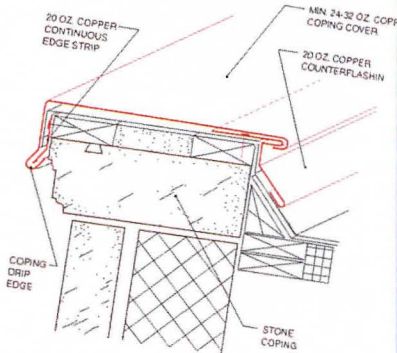
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Details

Flashings and Copings



A. Coping

Section 07612/Sheet Copp

THIS SECTION USES THE TERM "ARCHITECT" FOR THE ACTUAL TERM USED TO IDENTIFY THE ARCHITECT AND SUPPLEMENTARY CONDITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Division 1 Specification Sections

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Flat-seam copper

EDIT LIST BELOW TO SUIT PROJECT.

Specifications

Standing Seam Roof Panel Test

Report Number: C.C.L. Performance Test Report #90-1056
Report Date: 1 February 1991 Revised: 7 March 1991

Introduction

A Mock-Up Test Specimen consisted of a 16 oz. copper, cold rolled temper, 1" high standing seam roof section, sloped to a 4" in 12" pitch. The specimen was tested in accordance with SMACNA Roof Panel Test clarifications at the direction of SMACNA. The following text is an abbreviated description of testing procedures. The original document for a...

Specimen

Air Exfiltration Test per... exterior face of the specimen... impervious visqueen material... were sealed to allow no air... specimen. The exterior face... subjected to a negative static... 5.20 p.s.f. The measurement... through the chamber... impervious...

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CIRCLE 15 ON INQUIRY CARD

RECORD NEWS

FUND-RAISERS OPTIMISTIC AS DEADLINE LOOMS FOR DISNEY CONCERT HALL

With only four months to go before a July 1 deadline to raise \$52.3 million, fund-raisers for the long-stalled Walt Disney Concert Hall are confident that they'll not only reach their goal, but double it.

Fund-raisers need a total of \$150 million in new capital to construct the much-lauded Frank Gehry complex, which is slated to be built atop a \$110-million underground parking garage (already financed and built by the county) as part of a downtown Music Center that consists of the Ahmanson Theater,

According to the agreement, Disney Hall leaders have to raise roughly \$52 million by July 1, \$98 million by December 1, and \$142 million by June, 1998 before construction can resume.

The original bequest, made by Lillian Disney in 1987 as a memorial to her husband Walt, totaled \$50 million. That figure has soared to \$103 million, including a subsequent gift of \$25 million and accumulated interest.

At presstime, the grand total of contributions and pledges for the



rumors of five or six major donors close to making significant contributions, but, according to Music Center Chairwoman Andrea Van de Kamp, there are none that can be confirmed.

One of the donors was rumored to be Eli Broad himself. "I will make a seven-figure contribution at the appropriate time," he said, adding that his contribution is more on the order of working behind the scenes with foundations, corporate sponsors, and other individual philanthropists as a fundraiser. Another rumored angel is Mayor Riordan, a venture capitalist with an estimated \$100 million fortune. His

spokesman would only say that Riordan may make a contribution "at the appropriate time."

Disney Hall fundraisers remain unfazed by their effort's currently thin bottom line, and are finalizing what Nicholas Goldsborough, the COO of the Music Center, called "a tight business plan" for the end-run of the fund-raising effort.

If the goals are met, ground will be broken in Summer 1998 for a June 2001 opening. The complex will include a 2,380-seat concert hall, a multi-purpose pre-concert foyer, two adjacent amphitheatres, a 120-seat choral theater, and expansive gardens. *Julie Moline*



Mark Taper Forum, and Dorothy Chandler Pavilion.

The limestone and titanium-clad concert hall would become the new home for the Los Angeles Philharmonic, which is currently housed in the acoustically poor Dorothy Chandler Pavilion. The July deadline was set by county officials who are frustrated that their investment in the land they donated is as yet undeveloped and fear the project will become forever mired in delays and spiraling costs.

The project was nearly scuttled in 1995 when a construction deadline went unmet, but the developers were granted an extension after filing an eleventh-hour fundraising plan. It is estimated that the hall will now cost \$264.9 million.

remaining \$150 million balance was \$12.4 million. Recent efforts to find donations have been escalating. Harry Hufford, an investment executive for Bear Stearns, is spearheading the Disney Hall's fundraising committee. Mayor Richard Riordan and millionaire developer Eli Broad have joined forces to seek major donors.

Broad says he intends to personally bring in \$100 million in donations by the July 1 deadline. "I view the concert hall as a very important piece of architecture," he told RECORD. "Perhaps on the scale of the Opera House in Sydney or the Guggenheim in New York City. It's extremely important for the city of Los Angeles."

For months there have been

WHERE THE JOBS ARE FOR ARCHITECTS IN 1997

If you are an architect thinking of making a move, where are the best job markets? According to The Boston Society of Architects's (BSA) seventh annual survey of architectural market conditions, opportunities for architects at all levels abound in Kansas City, Pittsburgh, Denver, Dallas, Boston, Louisiana, Minnesota, and the southwestern portion of Pennsylvania.

The survey was sent to AIA chapters in Fall 1996. Fifty-eight responses from all 50 states were returned. Chapter representatives in 14 cities and states described their market conditions by checking the answer, "We're booming and our firms are desperate for skilled architects at every experience level."

This is the third year in a row that the economic news has improved, reports Richard Fitzgerald, BSA executive director. In 1993, there was not a single region of the country indicated that its local economy was booming.

"The results are encouraging because we're seeing generally improving economies, not the results of bond issues or major new employers," Fitzgerald said.

Areas where highly experienced architects are in particular demand include Wisconsin, Montana, Vermont, North Carolina, Colorado, Tennessee, Los Angeles, Kentucky, Minnesota, South Carolina, Rhode Island, Virginia, Louisiana, St. Louis, Mo., Sacramento, Calif., and Portland, Ore.

On the negative side, areas experiencing a generally "flat" economy for architects include Rhode Island, Illinois, Maine, and Santa Barbara. At the very bottom, pessimistic reports came from Hawaii (particularly Honolulu) and Cleveland.

Overall, Fitzgerald reports, the job market for architects is getting better and better. "It's not a boom," he says, "just nice steady growth. There's not much bad news around."

ARSON DESTROYS FAMOUS BRUCE GOFF HOUSE BUILT FOR JOE PRICE

Fire has claimed one of the most prominent works of the late Oklahoma architect Bruce Goff, just as a local group was gearing up for a campaign to restore it. Fire officials say arson was the cause of the late December blaze that destroyed the Shin'enKan house in Bartlesville, Okla. Goff designed the house for pipeline heir Joe Price whose father, Harold Price, Sr., commissioned Frank Lloyd Wright's Price Tower, also in Bartlesville.

"Shin'enKan was certainly the most important house of his later career," said Goff biographer David DeLong. "It was our best record of what he could do if not constricted by a tight budget."

The house was built in three stages of Price's life. Originally con-

structed in 1955 as a bachelor pad, it was expanded in 1966 for Price's wife; and in 1974 a tower was added containing children's bedrooms. Shin'enKan epitomizes Goff's divergent strain of the organic architecture championed by Wright. It features such unconventional building materials as anthracite coal-bearing walls and goose feather ceilings, as well as Goff's trademark explorations of geometric motifs.

When the Prices left Bartlesville in the early 1980's, they gave the property to the University of Oklahoma. Plans to turn the house into a conference center never materialized. Last year, the university sold the property to a neighboring landowner who had promised to give the house to the Friends of Shin'enKan, a non-profit group organized to restore and maintain the house.

Bartlesville police officials would not comment on their investigation. According to William Creel of Friends of Shin'enKan, it's unlikely that the house will be rebuilt since it was not insured. *Mark Alden Branch*

Goff's Bartlesville house, recently lost to arson, was one of the finest examples of his use of organic forms and natural materials.



ARCHITECTURAL PRESS ROUNDUP

JEWISH ARCHITECTS IN AMERICA

The New York Times, December 15, 1996 "This is a golden age for Jewish architects in America. Is their religion relevant to their art? Yes." This is the subhead for a lengthy discourse by Herbert Muschamp entitled "Architecture of Light and Remembrance." "This art [architecture] has produced an unprecedented flowering of Jewish talent in recent years," Muschamp writes. "A generation ago, Louis I. Kahn stood out not only because of his towering genius but because he worked in a profession largely dominated by the Protestant establishment. Today, Jewish architects lead the field. Besides [Moshe] Safdie, their ranks include Frank Gehry, Richard Meier, Peter Eisenman, Denise Scott Brown, James Ingo Freed, Stanley Tigerman, Robert A.M. Stern, and Eric Owen Moss."

HARSH WORDS FOR THE ARONOFF CENTER

Society of Building Science Educators News, Winter, 1996 Although Philip Johnson claims the Aronoff Center for Design and Art in Cincinnati has "no equal anywhere," not everyone agrees. Academic David Lee Smith writes, "The really frustrating aspect of [Peter] Eisenman's building is that while it is an extremely exciting architectural sculpture, it seems to be a stage set that fails to respond to the needs of its occupants. The mechanical systems ...violate some of the basic premises that I introduce to my students."

THE BEST DESIGN OF 1996?

TIME, December 23, 1996 Three buildings and a book about architecture made the magazine's ten best list for 1996. Heading the field was the Nationale Nederlanden Building in Prague designed by Frank Gehry and Croatian-born architect Vladimir Milunic. *S,M,L,XL*, the squat book about and by Rem Koolhaas came in third. Fourth was the Aronoff Center by Peter Eisenman. The Neurosciences Institute in La Jolla, Calif., by Tod Williams and Billie Tsien finished seventh. By way of comparison, a Calvin Klein dress was second, a woman's shoe was sixth, a cigarette box placed ninth, and the logo for McDonald's Arch Deluxe hamburger came tenth.

BANKS FOR THE MEMORIES

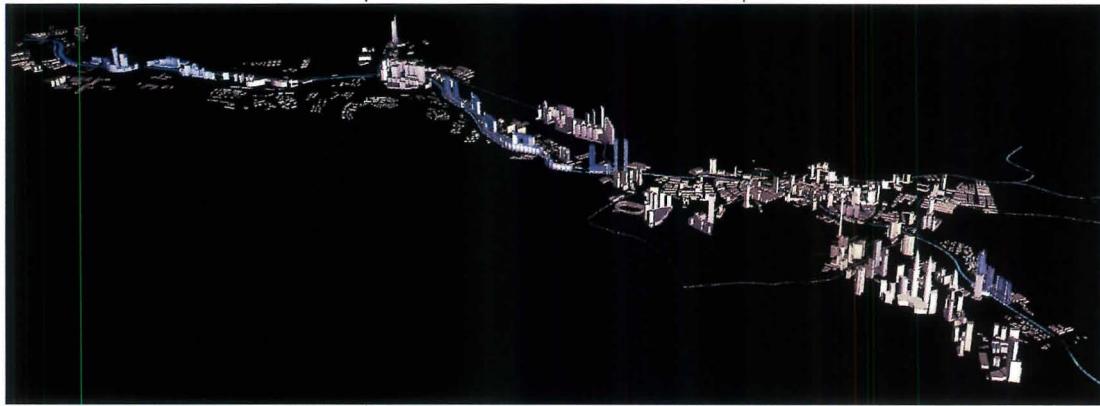
The London Times, November 20, 1996 Vast numbers of stately old banks are disappearing in Britain as architects transform them into pubs, restaurants, and pizza parlors. The reason: with cash machines, telephone and TV banking, the venerable corner bank is no longer needed. In the last five years, Lloyds TSB has disposed of 400 of its 2,800 branches, and NatWest, 1,000 of its 3,000 branches.

PHONE SEX AND ARCHITECTURE

The New Yorker, January 6, 1997 Under the heading, "The Little Apple," critic Witold Rybczynski describes his visit to Las Vegas' newest casino/hotel New York-New York. Designed by Gaskin & Bezanski, it consists of 12 connected towers, including a 47-story facsimile of the Empire State Building, and holds 2,035 rooms. "I have come here assuming that New York-New York is the ultimate Las Vegas folly. Instead I find it oddly affecting," the critic writes. "But as an architect, can I take it seriously?... Although this is a real building—a big real building—it is more like a movie set than like architecture. To paraphrase art critic Robert Hughes, New York-New York is to architecture as telephone sex is to sex." →

A NEW RECORD FOR KUALA LUMPUR? THE WORLD'S LONGEST COMPLEX

As the Petronas Towers in Kuala Lumpur make their mark as the world's tallest buildings, a neighboring site in the same city will soon claim a world record for horizontal



space. Designed by Kun Lim, Jimmy Loh, Simon Blore and Jon Ignatowicz of Original Scope Sdn Bhd, Malaysia, and developed by KL Linear City Sdn Bhd, the \$2 billion, 8.08-million-sq-ft Kuala Lumpur Linear City (KLLC) will be a 7.4-mile-long complex of shopping centers, hotels, residences, offices, and entertainment, cultural, and recreational facilities in the heart of the capital. When it's finished—somewhere around 2020—Kuala Lumpur Linear City will be the longest, mixed-use complex the world.

KLLC's centerpiece is Giga World, a 1.5-mile, 14-story inverted vault structure. The lower floors will house themed retail malls, and the upper floors will offer shops and restaurants housed in historical structures that recall the famous riverside cities of Paris, London, Venice, and Amsterdam. On the seventh floor, visitors can sail along a man-made indoor river that extends the entire length of the building in electric-powered flat-bottom boats, passing under bridges and alongside landscaped streets. They can also circulate throughout the caterpillar-like building via escalators, "travellator" people movers, elevators, cable cars, and a 9.3-mile-long elevated rapid transit rail linked to the existing subway system.

Giga World will also feature a landscaped urban park on the roof, 228 ft above ground, with dramatic views of the city. Four 30-story office towers and four 30-story resi-

dential/hotel towers will rise up from the roof with an independent structure and access system. The entire skin of the building will be automatically controlled by sun shades, louvers, and vents, changing the facade's appearance throughout the day and night.

Supporters of the KLLC project hope it will become a world-class tourist destination and expand the city's central business district.

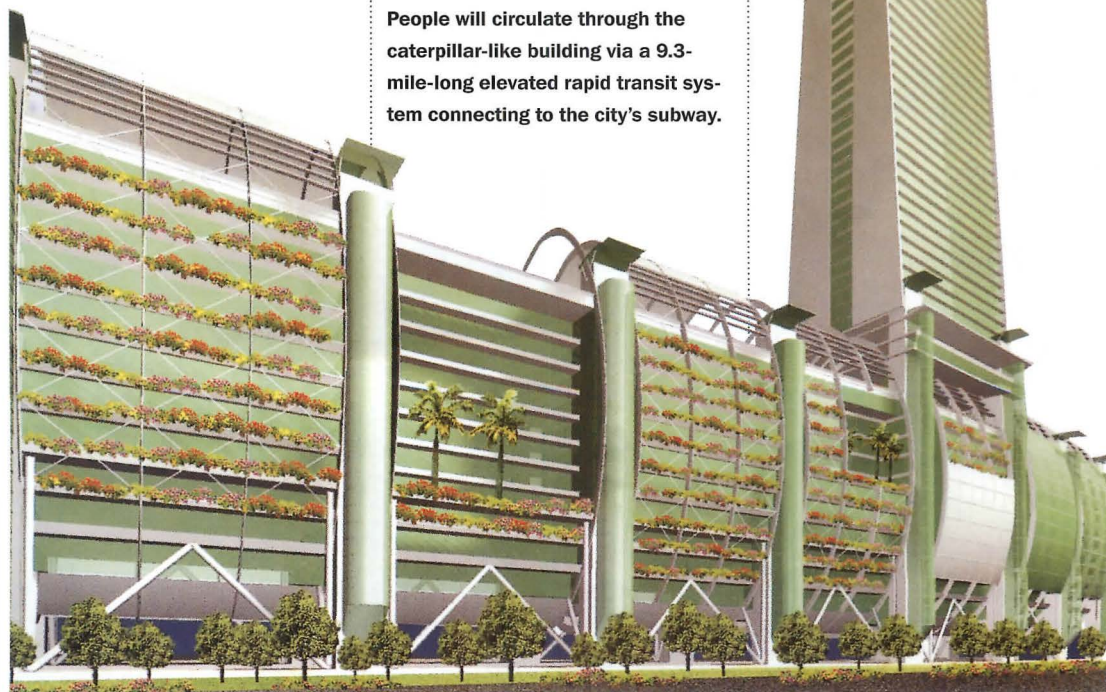
Detractors, including environ-

mentalists, claim that the project threatens the ecosystem of the Klang River, which the complex will straddle. Developers, who intend to spend \$80 million to clean up and rehabilitate the river, counter that the project will improve the water quality and rehabilitate aquatic life.

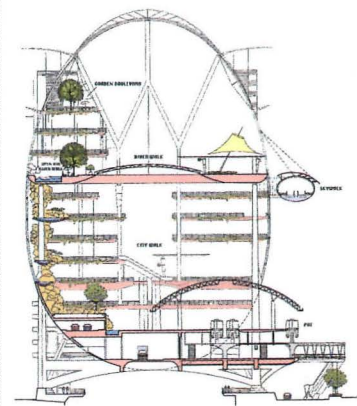
KLLC will span the river without intermediate columns that would create interruptions in the water flow. The underbelly of the building, shaped like a hull and painted white, will allow direct and reflected sunlight to reach the water's surface. Developers have also promised to resettle in new modern dwellings the 1,000 squatter families who live along the river banks.

It is also hoped that the complex will help relieve Kuala Lumpur's

People will circulate through the caterpillar-like building via a 9.3-mile-long elevated rapid transit system connecting to the city's subway.



horrendous traffic congestion by integrating public transportation systems. At the same time, the government is keen to reinforce Kuala Lumpur's "garden city" image by creating an urban leisure destination. "The project is attractive, sophisticated, and extraordinary," Prime



Minister Mahathir Mohamad boasted, echoing the developer's claim that the Linear City will be "an urban icon of the 21st century."

Katherine Kai-sun Chia

MEMBRANE COMPETITION WINNER HELPS TO HEAL YUGOSLAV WAR SCARS

Croatian-born architect Leo Modrcin of New York City has won Japan's Taiyo Kogyo Corporation Membrane Design Competition with a proposal to visually reconnect the Old Bridge of Mostar in Bosnia, which was destroyed during the recent Yugoslav Civil War.

The bridge, built in 1566 by Mimar Haidedin the Younger, in honor of the Turkish ruler Sultan Suleiman the Magnificent, was blown up by Croatian forces in an attempt to divide the city's Croat and Muslim populations.

For the competition, titled "The Third Generation Membrane Structure," Modrcin designed a pair of "responsive" screens to span between the remaining ruins as "an architectural membrane to create a visual replacement of the bridge and remind us of the senseless act of its

A temporary bridge is now in service (below). Modrcin's winning entry in the membrane competition (bottom).

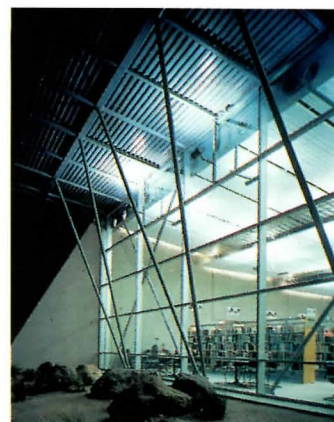
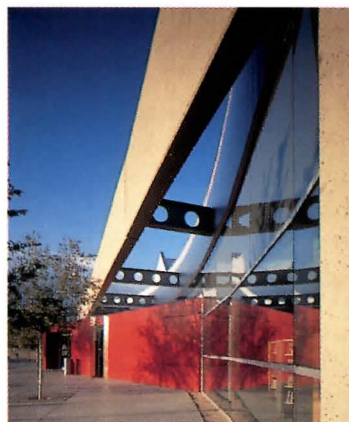
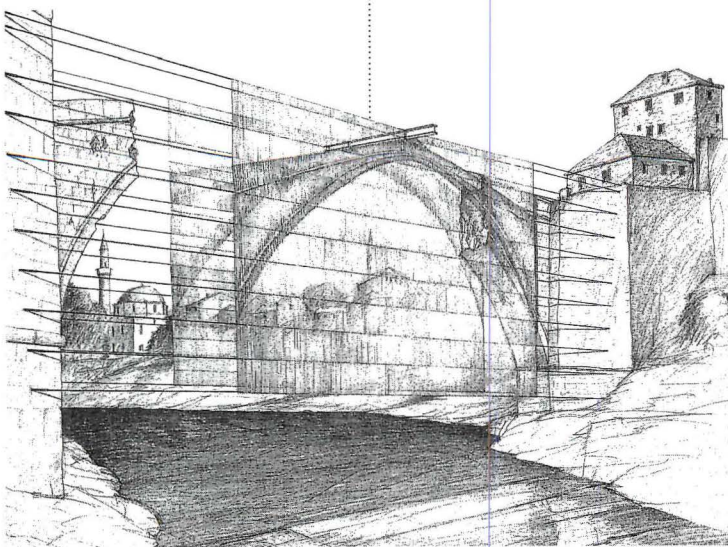


destruction."

The screens, composed of fiber-optic threads that form large display surfaces, are connected to computer terminals on both sides of the divided city and provide user-friendly opportunities for typed communication between the two sides. When the computers are not in use, the "screen saver" image of the former stone bridge appears. An aluminum girder suspended at the former vortex of the arch forms a structural link in the membrane. The girder also allows local youths to carry on one of Mostar's pre-war traditions: diving into the Neretva River 70 ft below so that they can prove their courage.

Modrcin's entry was described by the jury chairperson, Professor Mamoru Kawaguchi of Hosei University Japan, as possessing "sharp social sensitivity, abundant poetic sentiment, and excellent technical intuitive power." Other competition prize winners among the 176 entries from 24 countries were Akira Yamanaka, a student at the Architectural Association School of Architecture, U.K., and Martin van der Linden of the Institute of Educational Facilities Architecture, Japan. All winning entries are posted on the Internet at http://www.taiyokogyo.co.jp/compe/96/e_96.html.

Katherine Kai-sun Chia



CAN A LIBRARY'S DESIGN ENCOURAGE MORE PEOPLE TO READ?

Is a dramatic new library in Phoenix getting more people to read? Librarians at the Juniper Branch Library think so, claiming that people who stop by to check out the unusual building actually end up checking out more books.

Since its opening in July, 1996, the number of library cards issued at the Juniper Branch has jumped 106 percent over the same period in 1995. The number of books checked out has risen 26 percent.

The new \$1.3 million, 14,435-sq-ft facility, designed by Randall Fonce Architects Ltd., Phoenix, replaces a temporary 4,000-sq-ft building across the street. The new building houses 100,000 volumes and offers services for over 30,000 people per month, according to branch manager Susan Jones.

The building is comprised mostly of tilt-up concrete, steel, and glass. Each tilt-up panel is in a different shape and size, creating a unique geometry. The floor plan is split into three parts: the tree-shaded entry court, a central hall holding the library collections and reading stations, and a staff services block that also contains a meeting room. Large expanses of glass windows in the main room invite sunlight, allowing the strong southwestern exposure to provide primarily daylight spaces—and spectacular sunsets.

"It's a striking building, so when people drive by they are now more likely to come in and see us," says Jones. "It's the type of building you'll look at twice." *Danielle Beaugureau*

HAWORTH WINS, STEELCASE LOSES PATENT INFRINGEMENT SUIT A patent infringement suit filed by Haworth, Inc. against Steelcase, Inc., both office furniture system manufacturers, in November of 1985 has ended with the U.S. District Court for the Western District of Michigan ordering Steelcase to pay Haworth \$211.5 million in damages and interest for the 16 years the case and its appeal were pending. The decision and damages are binding and non-appealable.

The suit focused on the roughly seven million pre-wired modular panels, components in an office partition system, that Steelcase produced from 1978 to 1994. The case came before the U.S. District Court of Michigan in 1987 and was originally ruled in Steelcase's favor; however, the U.S. Court of Appeals reversed the decision in 1989.

The U.S. District Court also ruled in Haworth's favor on a separate lawsuit filed by Haworth against Steelcase related to computer keyboard shelves. In addition, the court ruled in Haworth's favor in a lawsuit filed by Steelcase against Haworth in April of 1989, which alleged that Haworth infringed on two Steelcase patents on pre-wired panels. →

CHICAGO MAYOR AND ILLINOIS GOVERNOR BATTLE OVER FATE OF CITY PARK

Chicago always seems to be fighting some sort of battle royale over design, but even by the city's typically boisterous standards of debate, the most recent fight was unusual. The fact that it was resolved by a compromise that made both parties happy, was also somewhat unusual.

The combatants, Democratic Mayor Richard M. Daley and Illinois Governor Jim Edgar, a Republican, were quarreling over Daley's desire to turn a tiny lakefront airport, Meigs Field, into a park.

Designed by Teng & Associates of Chicago, the mayor's \$27 million plan, if seen through to completion, will transform the 91-acre peninsula occupied by the airport into a park that will complement the activities of three nearby museums: the Field Museum of Natural History, the Shedd Aquarium, and the Adler Planetarium.

Such a step would be in keeping with Daniel Burnham's famed 1909 Plan of Chicago, which envisioned a lakefront primarily reserved for culture and recreation.

Adopting Burnham's vision as his own, Daley closed the general aviation airport on September 30, 1996 when its 50-year lease expired, in hopes of leaving a legacy to the city.

But state and federal courts prevented the city from demolishing the airstrip, which is prized by business executives as a convenient gateway to downtown. The delay allowed Edgar's supporters in the Illinois General Assembly to pass a bill authorizing a state takeover of the airport.

The conflict was resolved in early January, when Edgar and Daley came up with a compromise plan. The airport, they agreed, would be reopened for five years, with the

caveat that after that time the City of Chicago's Parks District is free to do whatever it wants with the land. As part of the compromise, the state is permanently enjoined by the courts from interfering with the land

in the future.

Daley is up for reelection in 1999. If he is reelected, chances are good that the park will be built as he planned. *Blair Kamen*

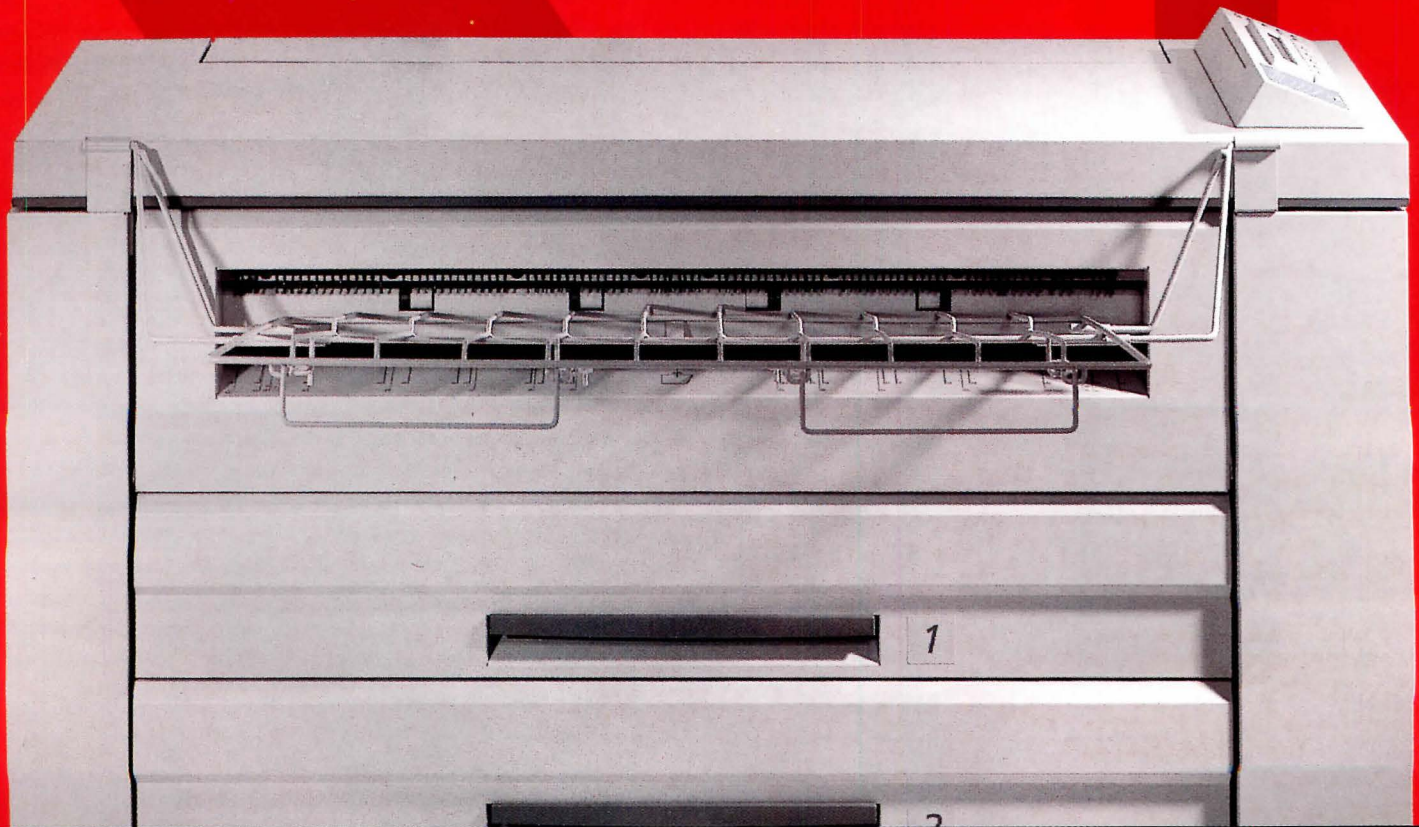
BANANA COMPETITION WINNER ANNOUNCED The Academy of Architecture, Arts & Sciences's recent Banana Competition held in Beverly Hills, Calif. had nothing to do with monkeys, pratfalls, or Carmen Miranda. Instead, it was a call for entries to design an arts complex in Havana, Cuba, which would include the building of a new opera house adjacent to the old one, as well as, what the competition organizers called "an incredible banana museum."

First prize in the competition was awarded to Jean Beaudoin of Anik La Brie and Martin Leblanc, Montreal, Canada. Second prize went to Nancy Lelieur of Scott Lelieur, Los Angeles, while third prize went to Magdaleine Vratsikidou of Jin Taria Alonso and Titus Spree, Tokyo.

The winning entry, "Skindeep," proposed four urban theaters that would be "morphed" with the existing opera house. The old opera house would become the backdrop for the new opera house's outdoor performance hall. As for the banana museum, it took on secondary importance by the architects and, apparently, the jury.



The digital engineering printer that



TSCHUMI DESIGNS FRENCH ART CENTER



Bernard Tschumi Architects has just completed the design of the 9,600-sq-yd international center for contemporary arts that will be "inserted" into Le Fresnoy, a 1920's leisure complex that includes a cinema, ballroom, skating rink, stables, and other facilities in Tourcoing, France, near Lille.

The new complex includes a school, film studio, "mediatheque" [media library], exhibition halls, two cinemas, production and research laboratories, offices, housing, and a bar/restaurant.

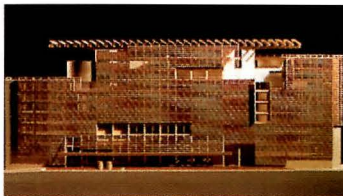
Tschumi describes the project, officially called the Le Fresnoy

National Studio for Contemporary Arts, as a "succession of boxes inside a box." Corrugated steel facades to the north and curtain wall facades to the south provide a contemporary transparent image to the entrance area and the main facade of the building.

A large landscaped terrace near the new bar/restaurant is linked, through a grand staircase, to an outdoor garden. The space between the new steel roof and the old tile roofs is mediated by large horizontal windows covered with transparent sheets of polycarbonate shaped like clouds.

"The interstitial space between the new and old roofs becomes a place of fantasies and experiments," said Tschumi, referring to the possibilities of using the space for film and performance. "The in-between becomes a condenser of interdisciplinary investigations between teaching and research, art and cinema, music and image." *Katherine Kai-sun Chia*

PATKAU ARCHITECTS WINS \$55 MILLION U. OF TEXAS NURSING BUILDING



Patkau Architects of Vancouver, B.C. has won the design competition for the University of Texas at Houston's Nursing and Biomedical Sciences Building. The \$55 million project will be the final component in an eight-unit health science complex that also includes a dental school, graduate school of biomedical sciences, school of public health, medical school, school of nursing, school of allied health sciences, and the Harris County Psychiatric Center. Following fund-raising efforts, the university expects groundbreaking in five years.

The competition, the first of its kind by the university system,

sought out "young firms willing to push the envelope in terms of design," according to Rives Taylor AIA, who designed the competition for UT. The challenge was to design a building "that would combine versatility with cutting-edge technology, ensuring the building as a landmark 20, 50, even 100 years from now," Taylor said.

"The competition was unusual because there were very few constraints—the most significant relating to neighboring Grant Fay Park, the last open green space in the Texas Medical Center. All participants in the competition—Enrique Norten, Lake/Flato, Machado Silvetti, Tod Williams Billie Tsien, and Steven Holl—responded "with forward-thinking entries that were smart, healthful, sustainable, and responsive to matters of security and environmental concerns," Taylor said. *Julie Moline* →

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NEWS BRIEFS

NCARB launches computer-based exam

NCARB's computer-administered Architect Registration Examination went on line in January at 215 test centers in the U.S. and Canada. The computer technology will allow the 17,000 annual test takers to schedule any division of the exam at a time and place convenient to their schedules. The nine-division examination will be completely administered and scored on computer. One feature of the computer mastery test format is that candidates who are clearly passing or clearing failing will not have to continue taking the test to its conclusion. More information about the exam is available on the NCARB web site at <http://ncarb.org>

U. of British Columbia's arts center nears completion

Bing Thom Architects, Inc. of Vancouver is completing construction on the



\$23-million 77,000-sq-ft Chan Centre for the Performing Arts at the University of British Columbia. The complex includes a 1,400-seat main concert hall, designed like a musical instrument with the audience seated inside the reverberation chamber; a 252-seat flexible studio theater with three levels of moveable seating towers, and a multi-purpose, 158-seat cinema. All are linked by a two-story glass

The Chan Centre for the Performing Arts at the U. of British Columbia.

lobby and outdoor patios with panoramic views. The zinc-clad center will open in March 1997.

Kemper Award to RTKL's Harold Adams

Harold L. Adams, FAIA, associates chairman and president of RTKL in Baltimore, Md., is the 1997 recipient of the Edward C.

Kemper Award. The founder and chair of the AIA's Large Firm Roundtable, Adams is also a member of the Maryland Economic Development Commission, and state chair of the World Trade Center Institute. The Kemper Award recognizes contributions to the AIA and the profession of architecture.

RECORD launches web site

ARCHITECTURAL RECORD is launching a World Wide Web site this month, architecturalrecord.com. According to Senior Editor James S. Russell, "Architectural Record Online will offer access to a world of information not found elsewhere. It also provides a forum for members of the design community to not just respond to stories published in either print or electronic versions, but to pose issues and questions." The RECORD online will also offer career opportunities and "links, links, links," he added. The site is free and requires no password or registration.

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AIA Thomas Jefferson Award winners An architect and two urban planners have been selected to receive the American Institute of Architects' 1997 Thomas Jefferson Award for Public Architecture. The winners were Richard A. Kahan, founder and president of The Urban Assembly, New York City; John Tarantino, AIA, chief architect of the Department of Capital Program Management for the New York City Transit Authority; and Hunter Morrison, director of Cleveland City Planning Commission. The awards, which will be conferred in May at the AIA's national convention in New Orleans, are presented each year to recognize excellence in architectural advocacy and achievement in the public sector.

President Clinton nominates Architect of Capitol President Bill Clinton has nominated Alan M. Hantman, a long-time Rockefeller Center Management Corp. official, to be Architect of the Capitol. In

nominating Hantman on January 7, Clinton is following the recommendation of a congressional commission, which in September named Hantman its top choice for the post.

Six grants for S. California Institute of Architecture The Southern California Institute of Architecture (SCI-Arc) has received grants from six different foundations in order to restore and edit its video archives of 25 years of lectures given by noted architects, artists, and creative thinkers; produce Urbarte, a Spanish/English publication focusing on socio-cultural and architectural issues related to the Los Angeles Latino communities; and support projects by members of SCI-Arc to produce publications through the Public Access Press.

Architectural historian Carl W. Condit dies Carl W. Condit, a widely recognized authority on the history of engineering and architec-



New W.W. II monument as envisioned at the east end of the reflecting pool.

ture, died last month at age 82. An emeritus professor of art history at Northwestern University, where he taught for 35 years, Condit combined technical expertise with the sensibility of a humanist, consistently showing how architecture is a bridge between technology and art.

World War II monument winner announced Friedrich St. Florian, former dean of the Rhode Island

School of Design, was awarded first place in the competition to design a World World II monument in Washington, D.C. His plan was selected from among six finalists from 400 entrants [RECORD, October 1996, page 17] by the American Battle Monuments Commission.

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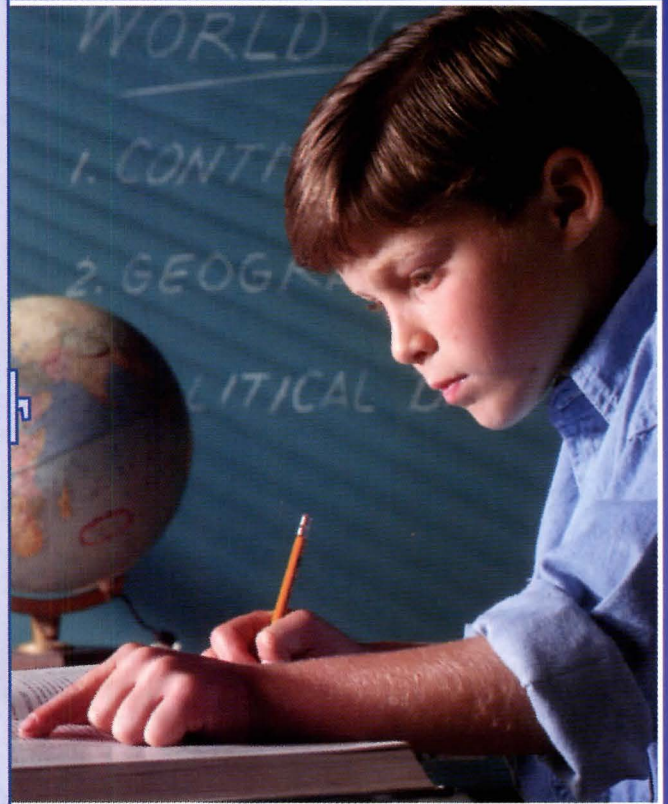
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CRITICISM: Eric Moss's SAMITAUR BUILDING, his latest project in the Culver City section of Los Angeles, plays against type.



Eric Moss (left) has a contemporary patron in developers Frederick and Laurie Smith. This project, his first design for them, isn't the first to be built.

The name of the Samitaur Building in Los Angeles sounds almost as if it is a play on the word "centaur," the mythic half-horse, half-man that gamboled around the mountains of ancient Greece. While Samitaur is actually the family name of the developers, Fred and Laurie Samitaur Smith, the association with the centaur turns out to be quite apt. In many ways, this office building, designed by Eric Owen Moss, FAIA, for an industrial site in South Central Los Angeles, is a hybrid. It is a hybrid of old, squat, remodeled industrial buildings and new construction raised on columns. It is a hybrid of structural technologies, where lightweight stucco over a wood frame is combined with heavy-duty steel construction. It is a hybrid of a rational orthogonal plan and highly sculptural volumes of stairs and outdoor gathering areas. On an urban level, the Samitaur Building is a hybrid of a pure, isolated architectural form and the continuously amorphous sprawl to which it belongs. Half-architecture, half-edge-city, it suggests a way architects and developers can effectively inject design into the hopeless effluvia of warehouses and manufacturing facilities ringing urban centers.

The elongated office structure is only one of a number of projects Fred and Laurie Smith have built or renovated in and near Culver City over the last 10 years. Their choice of Moss to design this complex, and some 20 other separate projects, is now a well-known success story [RECORD, July 1994, pages 62-69]. The results, totaling \$20 million for about 320,000 sq ft of completed construction, have not only transformed a dilapidated urban area, but won many awards, including the AIA Honor Award in 1990 for the renovated 8522 National Building in Culver City.

Suzanne Stephens is a contributor to Architectural Digest. She has also written for The New York Times and is former editor of Oculus, the publication of the AIA's New York chapter. She is currently pursuing a doctorate in architectural history at Cornell University.

by Suzanne Stephens

This most recent endeavor, which is now being occupied, is located where the 1992 riots took place following the Rodney King verdict. Amid a group of low-rise sheds and parking lots, the Samitaur Building is down the block from See's Candies, which was looted during the riots, and near a 7-11 store that was set on fire. "Our neighbors who own factories and warehouses have been leaving the city," says Fred Smith. "Our ambition was to stabilize the neighborhood."

The idea for the structure dates back to 1989, when the Smiths asked Moss to renovate the interior of a rundown sawtooth-gabled industrial building near Corbett Street and Jefferson Boulevard. Moss came up with a scheme that called for a new 320-ft-long, boxcar-like building to be raised on columns over an existing privately-owned truck road adjoining the sawtooth-gabled building, and wedged between a brick structure to the east and an aluminum shed to the west. The rationale for the elevated building was that it left open space at grade where the trucks serving the light industrial businesses in this complex could load and unload their wares. To do so meant that the office block had to be jacked up almost 21 feet off the ground to allow trucks a 14 1/2 ft clearance plus another six feet for supporting girders. Furthermore, the building has to stay within a 48-ft height limit, so that its two stories had 10 1/2 ft floor-to-floor dimensions, and lowish nine-ft floor-to-ceiling heights. Also, fire regulations kept the floors of the office space the same 30-ft width as the road,

Project: Cineon Kodak at Samitaur, Los Angeles

Owners: Frederick and Laurie Samitaur Smith

Architect: Eric Owen Moss Architects—Eric Owen Moss, FAIA, principal-in-charge; Jay Vanos, Dennis Ige, AIA, project architects; Mark Prezkop, AIA, Todd Conversano, Greg Baker, John Bencher, David Wick, Eric Holmquist, Paul Groh, Naoto Sekiguchi, Ravindran Kodalur Subramanian, Scott Nakao, Elissa Scrafano, Scott Hunter, Sophie Harvey, Sheng Yuan-Hwang, Isabel Duvivier, Carol Hove, Karin Mahle, Daryusch Sepehr, Ann Bergren, Jennifer

Rakow, Amanda Hyde, Lucas Rios, Eduardo Sabater, Janek Tabencki Dombrowa, Leticia S. Lau, Erik Hohberger, Julia Burbach, project team
Engineers: Kurily, Szymanski, and Tchirkow—Joe Kurily (structural); I&N Consulting Engineers—Paul Antieri, Paul Immerman (mechanical/electrical)

Consultant: Saul Goldin and Associates (lighting)

Metal Fabrication: Tom Farrage & Company

General Contractor: Samitaur Constructs—Peter Brown, director of field operations; Tim Brown, superintendent



The 320-ft-long boxcar-like building spans parking lot to parking lot, jacked up on steel girders over a roadway. It is only a piece of the developers' long term plan for transforming the urban wasteland of sections of Culver City/South Central Los Angeles into desirable addresses for creative enterprises.

“WHILE THE SALK INSTITUTE HAS A VIEW TO THE SEA, OUR VIEW IS A SEA OF INDUSTRIAL SLUDGE.”

since the fire department didn't want to see that long a structure extend laterally over other buildings.

By the 1992 riots, the developers had put the project on hold, while other buildings took priority. Few architects and clients would ever expect the project to re-emerge from this limbo, simply because businesses were quickly exiting the area. Then there was the design itself. The ambitiousness of the highly structural scheme might seem destined only for avant-garde architectural exhibitions of unbuilt projects.

Yet the Smiths were receptive to the scheme. “Both of the Smiths are interested in possibilities allowed by design,” says Moss. “They wanted to see how the city could grow without ripping apart all that had preceded it.” They already knew from the Culver City experience that new and renovated construction, rising from a nebulous surround, could galvanize the area with economic activity. Moss saw his efforts as posing an alternative to “New Urbanism,” which creates traditional small towns, on one hand, and to the Deconstructivist notion of inserting a deracinating form in an urban fabric, on the other. Although his work might tie him more closely to the latter group, Moss points out the difference: “I like to put contradictions into architecture, but then have something resolved.”

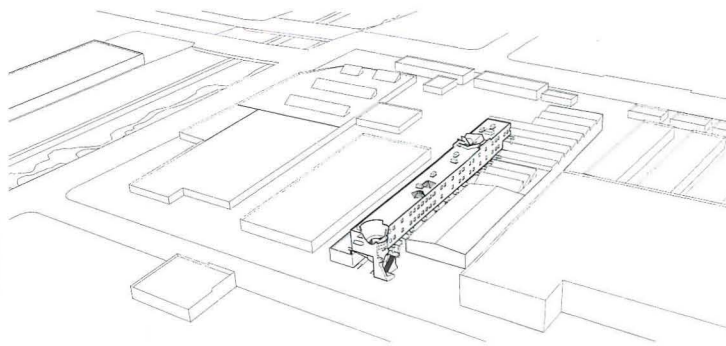
In 1994 the developers decided to go ahead and build Moss's design on the property they already owned, even if the banks were not behind them. “We couldn't get construction loans, and so had to use our own money,” says Fred Smith. By this time too, the leasing market had changed enough so that trucks no longer seemed so integral to the new complex. The information and communications sector of the economy was supplanting light manufacturing in Culver City and the nearby environs. Under these circumstances one might expect the long box-like building to be lowered to the ground, where it would be less expensive to erect. “A lot of people were surprised when the original elevated scheme got built,” says Moss. “The Smiths didn't have to be convinced, however. They knew the risks, and architecture fit into the strategy.”

Architectural visibility was definitely part of that strategy. Since most of the surrounding buildings are one- and two-stories high, the

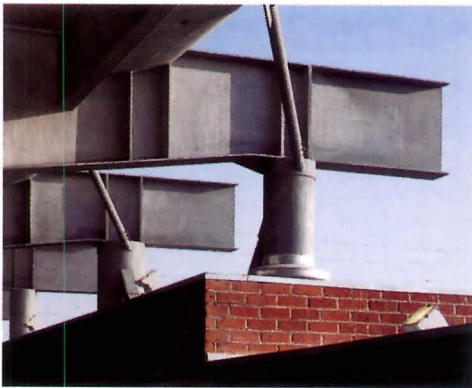
Samitaur, at 45 ft, functions as an important visual icon. Its elevated profile and the sculptural circulation pieces, plus its greenish hue make it identifiable on the horizon. On the ground, the open area under the new structure has created a common pedestrian space—itsself a hybrid between the underside of a bridge and a shopping arcade. “Let's call it the Champs Elysée of South Central L.A.,” jokes Moss.

The greenish-hued stucco covering the wood-framed bar of office space is tinged with brown and gray. “The objective was to make a color you can't quite define,” says Moss. The stucco in turn is gridded with aluminum strips that indicate expansion joints while giving the long boxcar shape a more intimate scale. In contrast to the skin-tight stucco on wood planes enclosing the office building itself are the massive structural components supporting it. Where the longitudinal building juts out over an existing truck drive below, it is carried on round steel columns 18 inches and 24 inches in diameter. The columns, with a zinc patina finish, are spaced at irregular intervals, and support steel girders tapered in depth according to different spans. “While the girder is structural, its actual shape is not,” admits Moss. “The girders dance around.”

Not even the stiffeners for the girders are aligned in a regular arrangement, but are placed in a syncopation that responds to the girders' varying loads and spans. Diagonal bracing for the building has been inserted within the existing brick structure on the west side of the complex, which houses rental space as well. Additional steel frames, needed to comply with earthquake codes, were installed along the transverse section of the new office building. “Structure is a very big word,” explains Moss. “In this case, it's not just about holding something up.” (*text continues*)



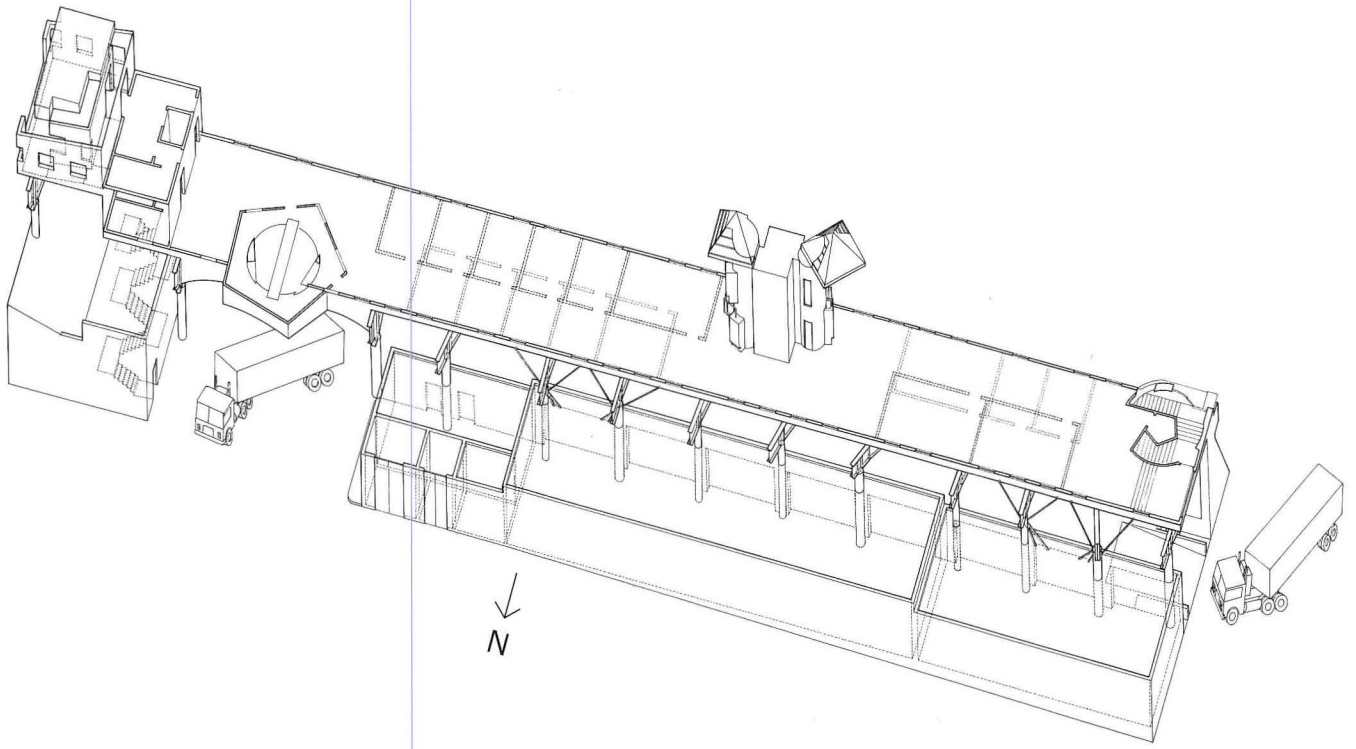




Greenish stucco covers the wood-framed exterior. A grid of aluminum expansion joints breaks down the massive scale of the elongated rectangular form, as do rows of modest-size square windows (top and

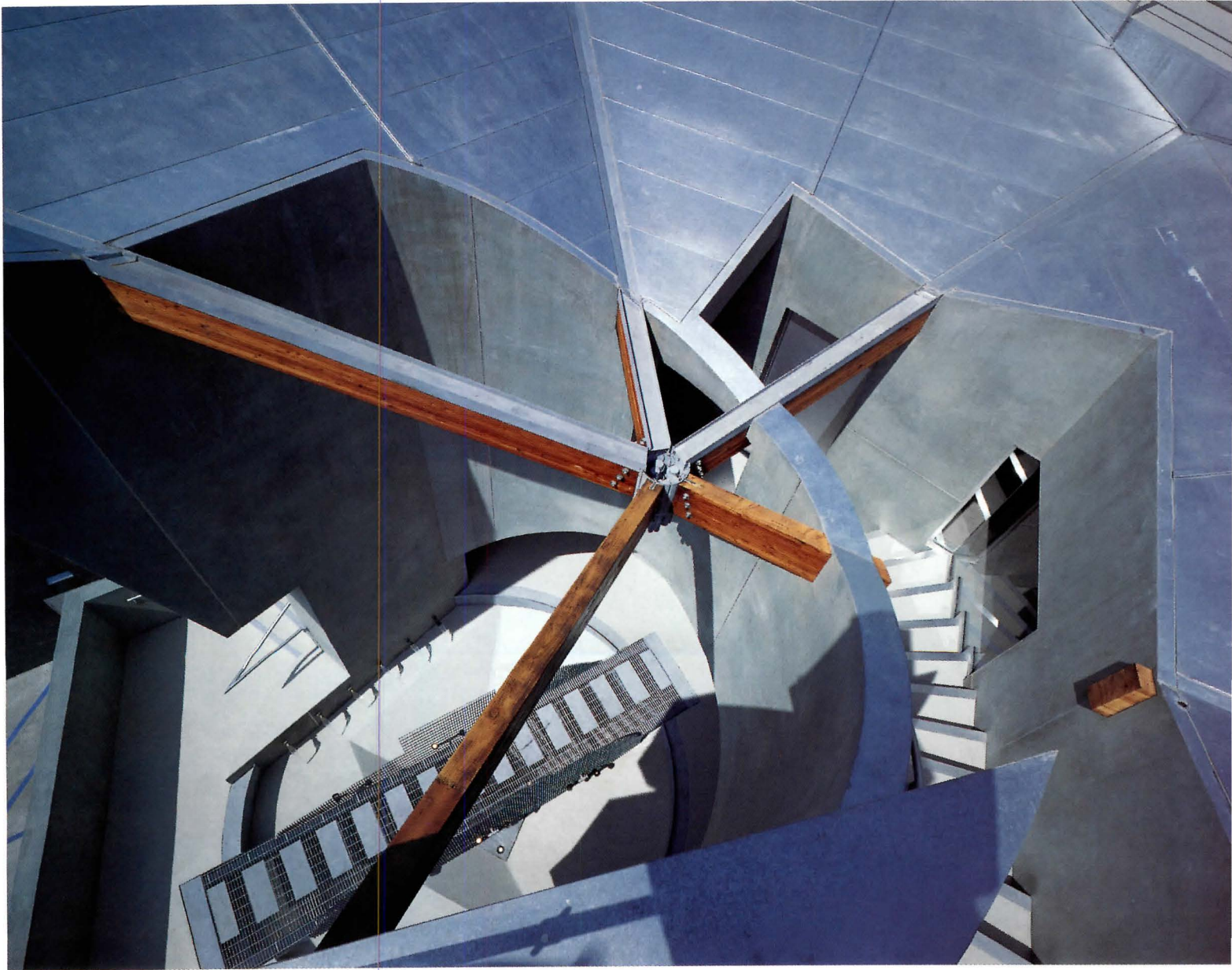
right). Structural support is provided by a system of tapered steel columns braced by diagonal members (above). An existing one-story brick shed, at the east end of the complex, was remodeled.

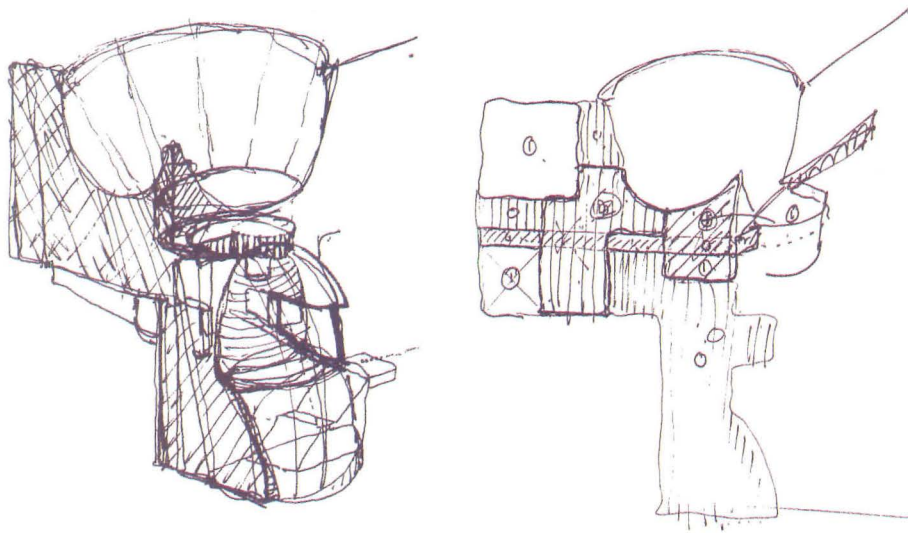






Moss's interest in overlapping geometries is revealed in the outdoor courtyard, which is suspended over the truckway to mark a secondary entrance to the office complex (opposite). The two-story space is a modified pentagon (below), with a staircase leading up to a viewing platform (right), a bridge, and a fountain. The space is crossed overhead by wood beams.

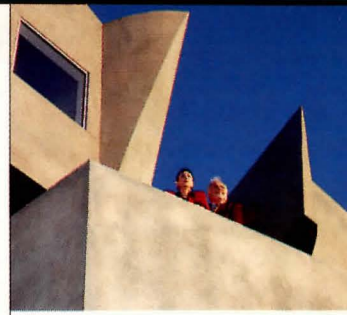




Moss's early sketches for the Samitaur Building (opposite), show that the built result remains consistent with his initial response: use the air rights over an existing roadway for

additional leasable tenant space. At the main entrance to the complex, Moss designed an entry piece with a stair inside, which he has described as "variously a cone, a cylinder, a pumpkin."





P E R S P E C T I V E

A Word from One Developer

about Architects Fred and Laurie Samitaur Smith are not the stereotypical bottom-line-only developer. Although Fred Smith has been involved in real estate development in the Los Angeles area for the last 25 years, in the 1960's he was a writer, journalist, and poet living in Europe. His wife, Laurie, is a former actress who is active in various conservation and preservation organizations along with being a developer. Their vision for Culver City and the industrial section of the west side of Los Angeles also goes against type. Over the last decade the two, with their company Samitaur Constructs, have been converting properties totalling 15 acres or 700,000 sq ft to new uses. During this time, with Eric Owen Moss as their architect, the Smiths have transformed industrial buildings and warehouses into offices and work space for film and entertainment people, designers, computer entrepreneurs, dancers, and artisans. Accordingly, they named their entire assemblage of buildings "Conjunctive Points," after the physics term for the point at which energy in a sub-particle space emerges into three-dimensional space. While the Samitaur building is now being occupied, the Smiths and Moss are completing the Pittard Sullivan Building, part of a piece of land in Culver City they own called the Hayden Tract. A number of other projects await.

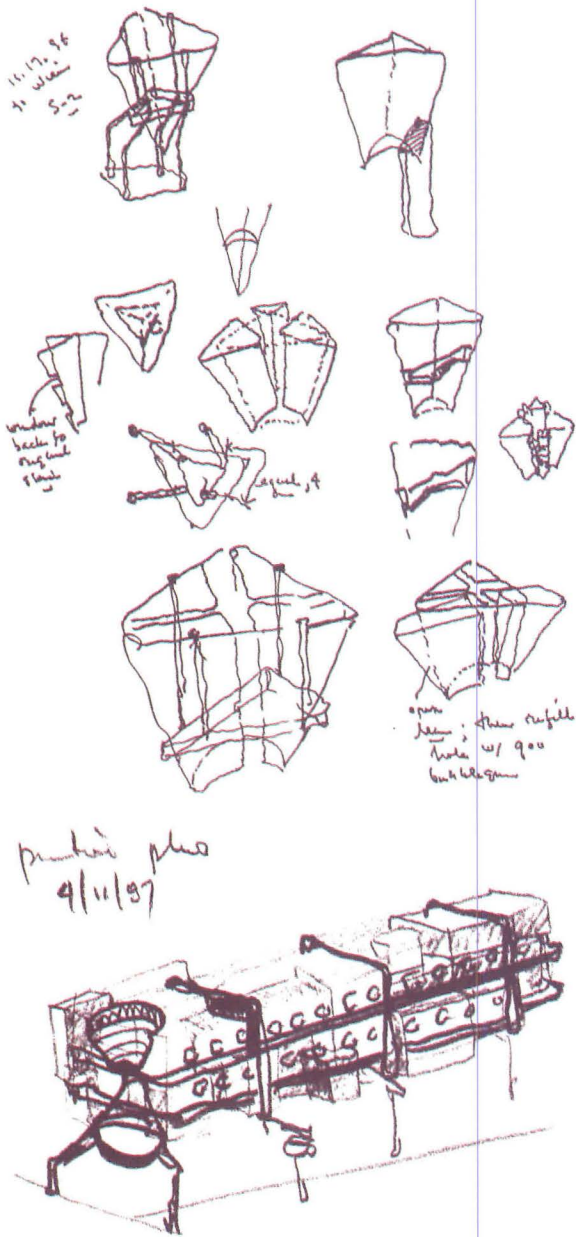
Fred Smith: "After I returned from Europe in the 1960's, I went to business school, and during that time began to build facilities for computer people. Silicon Valley was just taking shape; then practically everyone in northern California was working out of garages. I soon realized that the higher thinking

involved in computer design was not matched by the architecture of the buildings. I wanted to build offices that reflected the dynamic problem-solving going on inside, and so I began reading about the new math. When I thought I had an amateur comprehension of it, I began to approach architects to design buildings that showed this thinking.

"These architects rejected me. They weren't used to working in that manner with clients. They had their way of doing things and couldn't compromise. There were no open minds. I then sought out shopping center architects, because I thought they would have more imagination. But their minds were closed too.

"Around 1988 Eric [Moss] became a new tenant in one of my buildings in Culver City. I hadn't heard of him at the time, and I went in to collect the rent. We started talking about T.S. Eliot's 'Quartets.' I thought if I could explain my ideas through artistic and literary references, I might communicate. I was right. He was able to magnify my dreams—and they were dreams at the time. We started with 8522 National Boulevard in Culver City and then 3960 Ince Boulevard.

"But the purpose is not just to do architecture. It's to redefine what a city is. The architectural world is disappointing in its inability to seize on this kind of effort and become involved with it—that is, apart from Eric. What we are trying to do with Eric is make a national statement that good architecture is worth going after. Architects should entice developers with their thinking. They should not turn them away. They should seek them out and try to influence them. It is easy to say 'Developers hate us and will ruin our designs,' and walk off into the sunset, and teach somewhere. But the dialogue has to begin. The universities need to train architects about how to work with government agencies and developers, as well as how to understand materials. We have the fundamental belief that architecture is an art form. We wanted to show the local community—the normal people—it could be done."



While the elongated bar, with its straightforward orthogonal plan, allows flexible partitioning of interior spaces, two architecturally energetic incidents break up the air of calm of the overall volume. At the front of the complex, along the access road, is the first spatial event, a large sculptural stair that brings a strong orienting focus to the complex. The cutting and wrapping of the exterior walls are aggressively expressionist in a very identifiable Mossian manner. The helmet-like shape owes much to the hourglass form first seen in his submission to the "Late Entries to the Chicago Tribune Tower Competition" exhibition in Chicago in 1980. "Here, people, instead of sand, filter up and down," Moss states.

Midway through the southwest facade the second sculptural event occurs: a pentagonal two-story court not connected to the ground, with a stair, bridge, fountain, and a circular opening crossed by wood beams. This outdoor space provides a lookout over the surroundings. "Salk Institute [in La Jolla, Calif. by Louis Kahn] has a view to the sea," notes Moss, wryly. "Our view is a sea of industrial sludge." Ironically, framed by the architecture, even this panorama has drama.

At the north end of the complex, where the elevators link both old and new structures, a double-height boardroom projects over the

such areas, by upscale enterprises: Are they chasing out the less-upbeat businesses and minority workers that have long been in the area? This question is made more difficult by the economic erosion of South Central Los Angeles since the 1992 riots. Steven MacDonald, director of Los Angeles' Business Team for Mayor Richard Riordan, responds with a decisive "no way," to the suggestion that attracting graphic design, computer, and entertainment enterprises could drive out existing small businesses. "In Culver City and in this section of L.A., there were rotting warehouses, and the area was doing no good for anyone," he maintains. "By bringing in these new businesses, we will also encourage other small business, including coffee shops and restaurants."

Apart from such economic, urban, and architectural queries, the Samitaur Building still suggests that an aggressive but incremental approach is viable in salvaging the existing nether world that has swallowed so much of the American city. Already the Smiths and Moss are planning a second phase of the project. The city has indicated it might allow the team to go ahead with a proposal for a large conical-shaped tower, 125-ft high instead of keeping the 48-ft height limit for the area. For now, however, that phase has no specific date. Instead, MacDonald

THE HYBRID QUALITY OF THE DESIGN SOLUTION CONSOLIDATES ITS POSITION AS A 'CENTAUR' OF POETRY AND PRAGMATICS...

sawtooth-gabled roof of the existing industrial building, now painted a dark green. The massing, the muscular sculptural pieces, and the Herculean gesture of hoisting the long greenish-brown rectangular volume in the air, give Samitaur a splashy brawniness. Yet the clear disposition of office spaces and the integration of remodeled buildings in the ensemble affirms its basically functional purpose.

The hybrid quality of the design solution consolidates its position as a "centaur" of poetry and pragmatics, as well as of architecture and urbanism. Nevertheless, its idiosyncratic nature raises the question about its being just a "one-off" solution. Does it represent a potentially viable direction for other such efforts? While the supply of underused industrial buildings smoldering on the outskirts of cities occurs nationwide, the amount of structure needed to hoist Samitaur off the ground may not appeal to developers looking for workaday solutions to office buildings in these areas. Fred Smith concedes that building in the air is "expensive," but won't elaborate on figures. Pressed about square footage costs for the new elevated portion, he responds, "We are not sure what they will be."

As a "prototype" solution, Samitaur should probably be judged as a building-as-logo. It is meant as a symbol of regeneration of the area—a sign of the pride and faith in the city, as well as the affirmation of the value of "design." Evidently its handling of these issues was convincing to a Fortune 500 company, which is taking both of the floors in the air, totalling 15,000 sq ft, plus an additional 5,000 to 6,000 sq ft on the ground, for its digital motion picture group. Fred Smith admits that, "The lease has as much momentum in closing the deal as the architecture." Still, as Laurie Smith notes, "The company didn't have to go into this neighborhood. They love the building and liked the lease." The Smiths know, as does their architect, that the ultimate "success" of Samitaur remains to be seen—functionally, after the occupants have settled in, and financially, after all the leases in and around the complex are in place, and are being renewed. "We should know five years from now," says Fred Smith.

Some clients might consider the building too expensive; others might look at the architecture as too heavy-handed, or even too playful. Naturally this type of solution would be perceived differently depending on the context. There is also the question about the "gentrification" of

emphasizes the city's recent approval of a financing deal that will help the Smiths buy the Olympic Plastics building to the west of Samitaur.

Moss argues convincingly that the overall benefits of this effort accrue to the profession itself. As Moss, who has recently taught at Yale and Harvard among other architecture schools, puts it, "There has been a lot of discussion among students lately about how you can do something in the world of architecture. It seems you have to play the game from a center of power—that is, working with the institutions that decide things. Architects who don't do that are marginal." As far as the developers go, Moss maintains, "The Smiths' approach is bringing the center of the power to the margins—to the edge. Fred and Laurie Smith are saying that may be the way the world runs, but they won't go along with that. They are creating the situation in which they can work."

In Culver City, the margins have become a center for action, and the Smith-Moss team can take much of the credit for sparking the growth of business and entertainment campuses there, including one belonging to Sony. While many of the other design efforts look conventional next to Moss's arresting renovations, at least the ball is rolling. Other developers and their architects may decide to follow the Smith-Moss precedent. It suggests that old structures can be revitalized with injections of innovative design. It also demonstrates that high design doesn't have to be tossed out the window when the developer knocks. ■

Manufacturers' Sources

Manufactured wood joists: *Truss Joist MacMillan*

Thermally-applied zinc finish, with chemical patina: *Copperlok Systems*

Exterior cement plaster, custom color: *La Habra Stucco/Eddie Carrillo Plastering*

Modified-bitumen built-up roofing with cap sheet: *GAF*

Fixed and hopper-type windows: *Torrance Aluminum*

Storefronts: *US Aluminum*

Custom-fabricated aluminum-frame skylights: *Aluminex*

Overhead coiling doors: *Cookson*

Locksets: *Schlage Locks*

Interior paints: *Dunn-Edwards Paint Co.*

Fluorescent strip lights: *Daybright*

Incandescent spotlights: *Stonco*

Low-voltage lighting: *Focus Lighting*

Lumiere lighting: *Oase K2 Vario*

Exterior flood lighting: *McPhillben*



While Moss's structural bravura makes for dynamic sculptural moments outside and inside (below), he also does provide ample open-plan leasable space for his developer

clients (left). Skylights and rows of north- and south-facing windows admit natural light into the elongated box. Interior spaces will be modified by tenants as they take occupancy.



Looking north, visitors to Wagner Park can see apartment towers at Battery Park City, office buildings at the World Financial Center, and the World Trade Center (right in photo this page). Looking southeast, the pavilions frame views of the Statue of Liberty and the harbor (opposite).



WAGNER PARK, a controversial addition to New York City's waterfront, snaps into place—by Machado and Silvetti with the Olin Partnership.

by Clifford A. Pearson

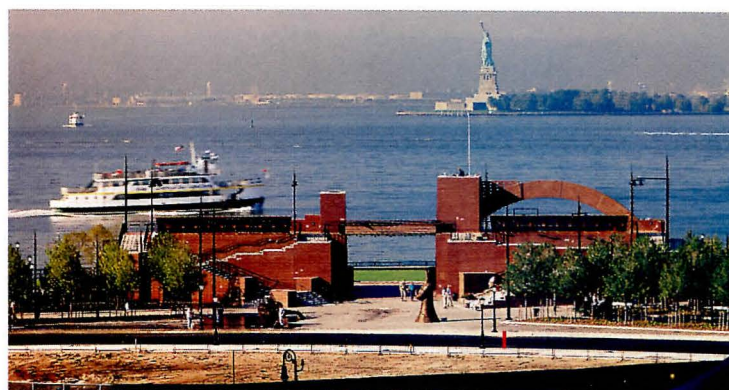
It's the view, stupid. That dictum, ignored at peril by the designer of a previous scheme for the project, ultimately became the organizing principle of the recently completed and much-acclaimed Robert F. Wagner Jr. Park at the southern tip of Battery Park City in Manhattan. With the Statue of Liberty and Ellis Island close enough to snag with a good cast of a fishing rod, it doesn't take a genius to see the importance of framing views and aligning the park's key elements to the torch-carrying copper icon in New York Harbor. But architects Machado and Silvetti Associates, in collaboration with landscape architects at the Olin Partnership, and garden designer Lynden B. Miller—the team that made Wagner Park a reality—were wise enough to understand it's not just the view, stupid.

A 3.5-acre site wedged between the planned community of Battery Park City, the historic paths of Battery Park (now crowded with tourists and phony Rolex hawkers), and the financial district's crush of skyscrapers, Wagner Park sits at a crossroads of public, private, and quasi-public realms. Respecting the project's remarkable location while carefully negotiating New York's byzantine politics is no easy feat. Just ask Jennifer Bartlett, the artist whose 1988 design for the project (then called South Garden) featured an inward-looking grid of small outdoor rooms and elicited such an outpouring of negative reactions that it suffered a long and public death.

Burned by the Bartlett fiasco, the Battery Park City Authority (BPCA), the state-chartered agency that oversees public and private development at Battery Park City, established more specific design guidelines for its second go at the project. These included keeping views to the water open, creating a place that feels safe and welcoming, and building a park that is not expensive to maintain, says Susan Kaplan, senior project manager for BPCA.

After interviewing more than 10 design firms in 1991, BPCA decided to pair Machado and Silvetti with landscape architect Laurie Olin (whose firm was then known as Hanna/Olin). Olin had already designed Battery Park City's waterfront esplanade and worked on several portions of the community's master plan, so he was a logical choice. Rodolfo Machado and Jorge Silvetti, on the other hand, had built very little and showed mostly plans of beautiful urban interventions in European cities. Although known in academic circles and for teaching at Harvard, Machado and Silvetti were clearly a bigger risk.

Since the early 1980's, the BPCA has frequently commissioned



work from artists and designers who aren't on "the usual suspects" list, and often pairs them with more established firms.

"We were attracted to Machado and Silvetti's urban-design interests and the way they thought about open space," says Kaplan. "They approached space from more than just a traditional park point of view." Although known for their theoretical work, the architects say they enjoy the rough and tumble of the building process. In their 1994 monograph *Unprecedented Realism*, the pair writes, "Theory can no longer be separated from practice," and discuss how architecture must connect to popular culture and buildings to their larger contexts.

Indeed, engaging its surroundings is a key theme in the design of Wagner Park and the dual pavilions at its center that house a café, restrooms, and a maintenance room. Anchored by a strong axis aimed straight at the navel of Lady Liberty, the park opens to views of the harbor. Both the landscaping and the architecture provide a variety of perspectives of the harbor, offering some of the best places in town to

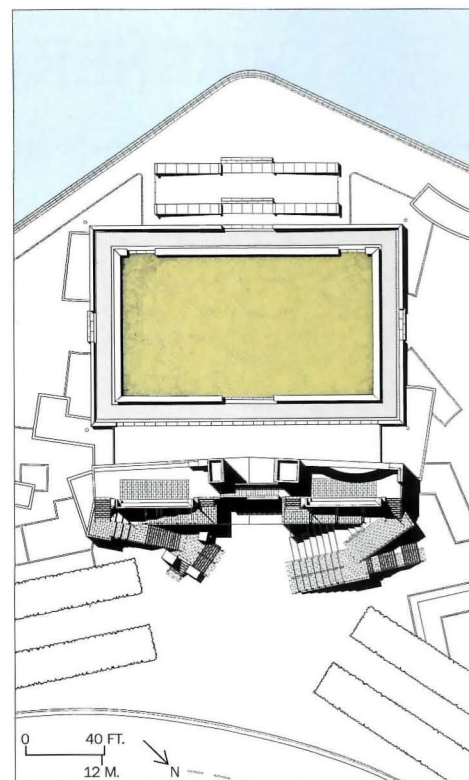
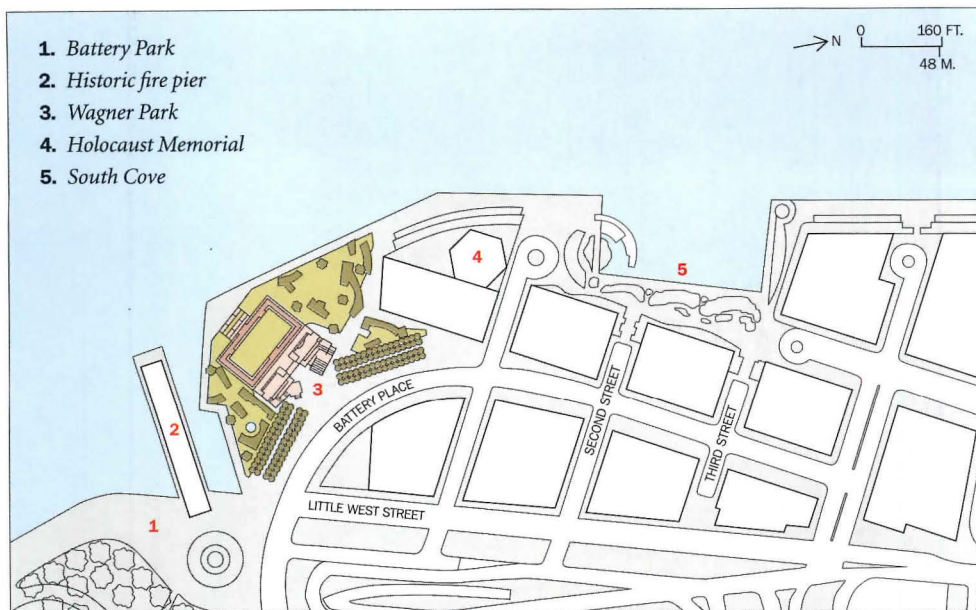
Project: Robert F. Wagner Jr. Park
New York City

Owner: Battery Park City Authority

Architect: Machado and Silvetti
Associates—Rodolfo Machado, Jorge
Silvetti, principals-in-charge;
Peter Lofgren, project architect; Douglas
Dolezal, Elizabeth Gibb, Nader
Tehrani, design team

Landscape Architect: Olin
Partnership—Laurie Olin, Lucinda
Sanders, principals; Bobbie King,
project manager; Karen Janosky, senior
landscape architect; Cora Olgyay,
Marsh Kriplein, Kacey Constable, Karen
Skaft, Les Bishop, Lara Deines, Joseph
Eades, design team

Garden Designer: Lynden B. Miller



The last piece of park space at Battery Park City, Wagner Park continues the waterfront esplanade that runs the length of the planned community. The new park serves as a link between the resi-

dential areas of Battery Park City and historic Battery Park (site plan above left). On the city side (east), the pavilions and their grand staircases form a plaza and informal amphitheater (left).

appreciate the Statue and its setting. From the east (the city side), the brick-clad pavilions and the bridge connecting them form an architectural frame for viewing the Statue. Walk up the grand stairs that are the highlight of the pavilions' east face and you get to the rooftop terrace of each pavilion—the one to the north offering views bracketed by a grand brick arch and the one to the south left unobstructed.

Making connections

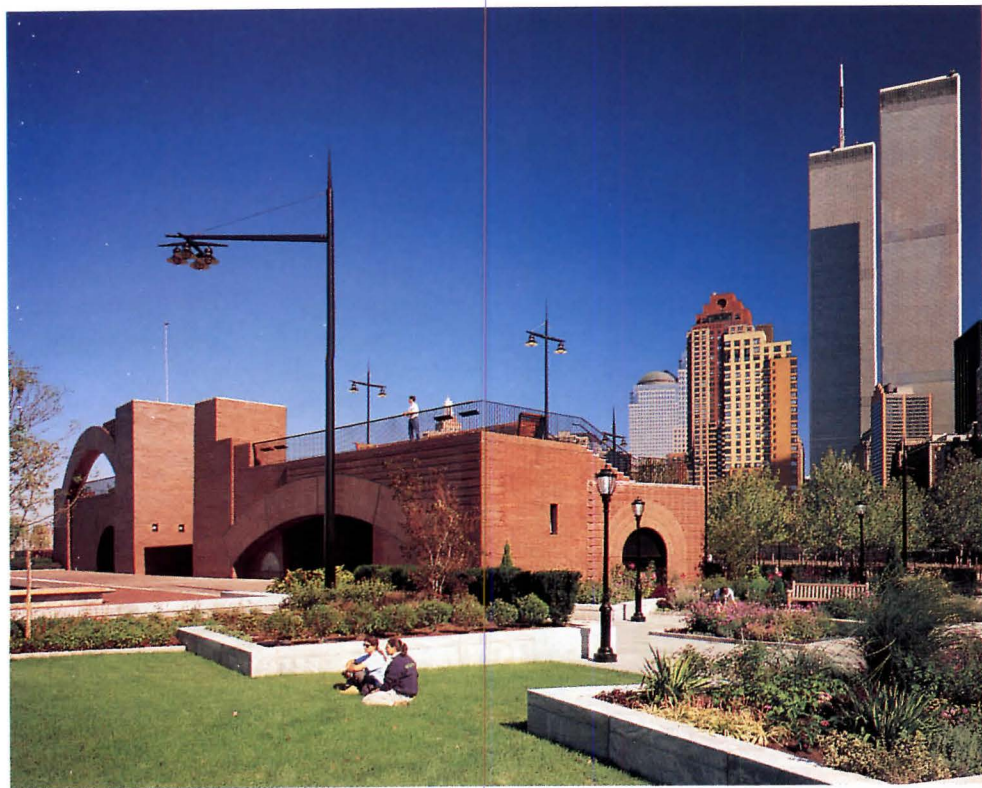
Away from the water, the park's central axis branches off into two tree-lined allées that connect to Battery Park to the south and the rest of Battery Park City to the north. While some residents of Battery Park City were wary of making a strong connection to the less tidy environs of Battery Park, the designers of Wagner Park provided clear links without sacrificing the special character of their more regulated realm.

Because they act as a transition between the water and the financial district's skyscrapers, the connected pavilions had to accommodate a quantum leap in scale. "The idea was to make it massive," explains Machado of the pavilions' architecture. "We had to deal with the monumental scale of the Hudson River and the World Trade Center." As a result, the small pavilions "had to look bigger than they really are," says Machado. The architect's initial scheme suggested an ancient temple whose ruined columns and foundations are all that's left. During the design process, the temple and ruins evolved into a thick wall with giant

arches that vaguely evokes images of massive pylons supporting some kind of urban infrastructure (see sketches on last page of article). "Getting the right scale was key," asserts Machado. "The building had to stand its ground without overpowering people in the park."

To reinforce the building's bulky esthetic, the architects canted some of its vertical edges and angled (ever so slightly) the waterside facades of the pavilions. Long Roman brick, laid in nearly a dozen different patterns, adds texture to the building and contributes to the muscular quality of the architecture. Despite appearances, the building is a poured-concrete structure and the bricks are merely cladding. A thin metal frame around one of the brick arches gives the joke away and is one of the few false notes. After expending so much effort creating the illusion of mass, why undermine it with a sly architectural wink? Do we really want the magician to tell us how he does his tricks?

Like good sculpture, the pavilions work from all directions. From the water side, they provide access to restrooms and a small take-out café, and serve as a hard edge to the 162-ft-wide grassy terrace that is the project's front lawn. Flat facades and great arches defer to or frame views of the water. From the city side, the pavilions and their sprawling stairs wrap around a plaza and form an amphitheater where street performers and more organized events can entertain visitors. Here brick and granite steps zig-zag their way up the pavilions, brandishing a tough urban character that complements the jagged skyline just beyond.



Seen from the water side, the pavilions with their asymmetrical arches evoke images of a human face, albeit a winking one (above). When the designers began work on the project, the only function envisioned for the pavilions was as a maintenance facility. "From the start, we knew we needed a raised terrace for viewing," says Rodolfo Machado. "So we needed something to put underneath it. A café and restrooms seemed like good ways of bringing activity to the building," explains the architect. The café

is under the wide arch on the right pavilion (above), while entry to the restrooms is through the small arch in the left pavilion. Short lamps in the park are the same as those lining Battery Park City's esplanade; tall ones were designed by Machado and Silveti for this project (left). A garden with wooden benches and beds planted with a complex mix of flowers sits on the cityside of the park, while sloped and angled beds with fewer varieties of plants stretch out toward the water and the view of the harbor (left).



Sunk a foot and a half to protect plants from waterfront winds, a garden has its own microclimate that is a few degrees warmer than the rest of the park (above). Abutting an allée on one side and the pavilions on another, this garden has a sense of enclosure that contrasts

with the open lawns closer to the river. Tapestry-granite steps (left) lead to viewing terraces 19 feet above the ground. Tall wood-backed benches (left in photo) were modeled after ones found in windy coastal locations in other parts of the world.

Since the architects, landscape architects, and garden designer worked collaboration, all of the pieces at Wagner Park fit together. From the start, Machado and Silvetti and Olin explored similar ideas. Olin remembers being startled at how similar his initial “doodles” were to sketches drawn by the architects. “We both had fragments of architecture set in a park and opening to the harbor,” says Olin. About halfway through design, however, things seemed to get stuck. “Various aspects of the project were too compartmentalized and too stiff,” recalls Olin. “So we started prying open the flower beds and other parts of the landscape.” Machado and Silvetti responded by angling the pavilions and bending the stairs. “What happened was a good old-fashioned iterative process of each of us going back and forth responding to moves made by the other,” explains Olin. “It was great.”

Different faces for the city and the water

“The site and buildings really interlock,” says Lucinda Sanders, a principal at the Olin Partnership and the project manager for Wagner Park. Just as the pavilions present different faces to the city and the water, the landscaping changes from formal allées and traditional English flower beds on the east to angled planting areas that seem to be flying apart toward the west. Gardens on either side of the pavilions are sunk 18 inches to protect flowers from the harsh harbor winds and create slightly warmer microclimates, explains Sanders. In fact, the small drop has worked so well that extra shading may be necessary until trees along the allée fill out.

The closer to the riverfront the park gets, the more open its landscaping becomes. In a city where open space is one of those great luxuries, the rectangular lawn terrace running the full width of the pavilions and facing the harbor is a dramatic element that takes center stage. Rimmed by a backless wood bench with a gentle pillow profile, the lawn is an unadorned plane of grass. The understated elegance of the lawn wipes away all thought of the suburban variety and takes us right back to its Baroque roots.

Although it took two tries and several extra years to get it right, Robert F. Wagner Jr. Park shows it’s still possible to create remarkable public spaces and the quasi-governmental BPCA can still play the role of enlightened client. With just 3.5 acres and \$14 million to play with, the designers sculpted a series of gardens, lawns, plazas, and terraces that offer a variety of experiences, from sunbathing between the twin shadows of the World Trade Center to soaking in the view of New York Harbor. Equally important, the project serves as a welcome link to the rest of downtown, providing a retort to critics who say Battery Park City has kept the less tidy realm of lower Manhattan at arm’s length to buffer its mostly middle-class residents from the urban fray. ■

Manufacturers’ Sources

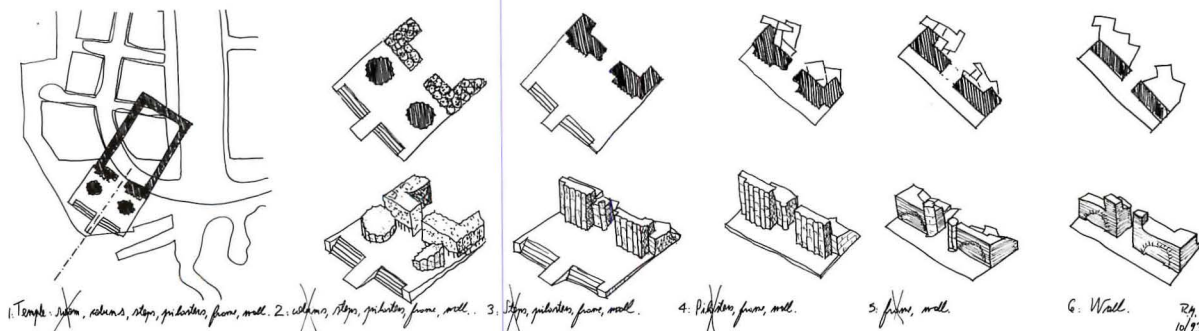
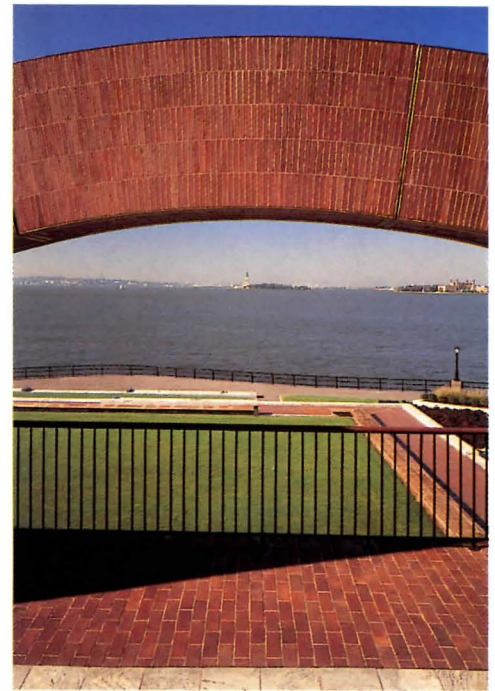
Brick: Endicott, Ironspot #46

Stone: Kitledge tapestry granite; Fletcher granite

Steel windows: A&S Windows

Exterior lighting: Bega (fixtures); poles (custom)

Elevators: Dover Elevator Systems



The solidity of the pavilions serves as a counterpoint to expansive views framed by arches and allées (above). Sketches (left) show the evolution of the design from a temple ruin to a thick wall split by a gate.

Margaret Helfand used a veneer called Strathaven Gneiss for Kolhberg Hall's exterior to match the stonework typical of the Swarthmore campus (opposite). Treated as a "wrapper," it contrasts with existing buildings' bearing walls.



ANALYSIS: Margaret Helfand's KOHLBERG HALL at Swarthmore College is Quaker in substance, not in style.

by Thomas Hine

It's easy to understand why there has never been a coffee table book called "Quaker Style." Unlike the obsessively refined simplicity of the Shakers, the Quaker ideal of plainness has produced, more often than not, buildings of timeless awkwardness that fuse the durable and the dowdy.

Swarthmore College is an institution that is very aware of its Quaker tradition despite the presence of few actual Friends. When it became clear that more academic space was needed, Swarthmore approached the issue in a very Quakerly way—with serious study, years of consensus-building, broad participation, occasional reconsideration of previous decisions, and an eye to the century after next.

The result was an ambitious rethinking and reconfiguration of the heart of the school's campus, with Kohlberg Hall, an austere, picturesque 57,000-sq-ft building of classrooms, offices, and gathering spaces as its centerpiece. It's Quaker and, quietly, stylish.

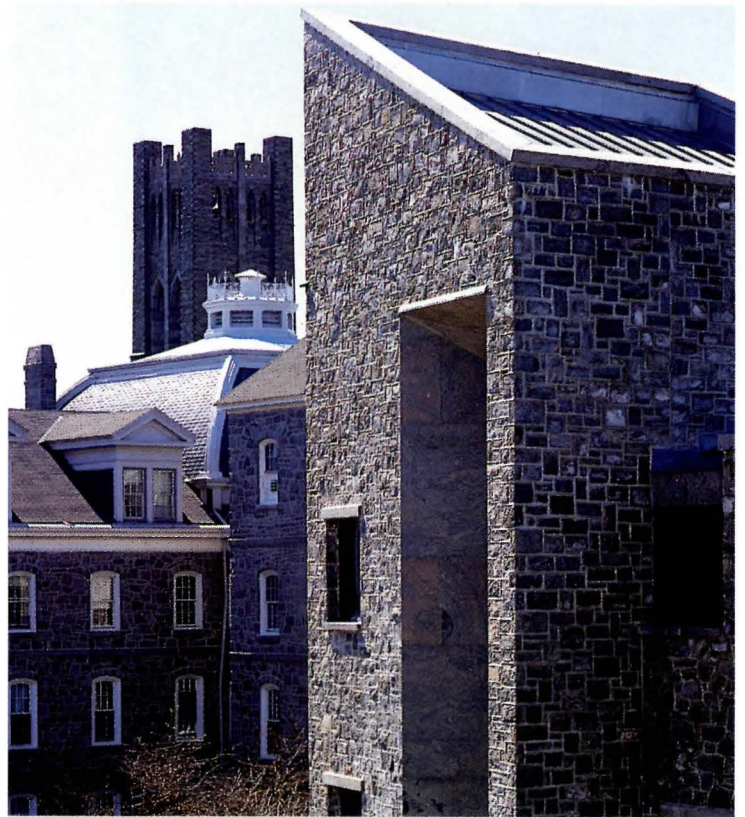
Combining such traditional elements as the same local gray Strathaven Gneiss used on old campus buildings, and such contemporary ones as colored, dichroic (coated) glass accents, Kohlberg Hall does not look as if it has always been there. But it does look as if it always should have been there. Swarthmore, a small college whose buildings are scattered about a large arboretum, finally has an architectural focus.

The project began with the college's decision to do something about its oldest classroom building, which was both overcrowded and badly deteriorated. "The question of whether to renovate and add, or demolish and rebuild, or renovate and build another building suggested a need for a master plan that could also address future sites, paths, roads and other issues," says Larry Schall, the associate vice-president who shepherded the project.

After a nine-month selection process, a design team of two architecture firms, a landscape architecture firm, and an artist was put to work on all these issues. Their recommendation: renovate the old building and build a new one on a site that was obvious, but difficult because it required relocating the campus utility infrastructure.

"The master plan was important because it gave us a decision not only on where the building should be, but what it should be," said Margaret Helfand, AIA, Kohlberg's architect. She credits collaborators

Thomas Hine is the author of The Total Package, Facing Tomorrow, and Populuxe. He was the architecture critic of The Philadelphia Inquirer from 1973 to 1996.



Project: Kohlberg Hall, Swarthmore College, Swarthmore, Pennsylvania
Architect, master plan/conceptual design: Helfand Architects and Ehrenkrantz & Eckstut Architects in association; Coe Lee Robinson Roesch, Inc., consulting landscape architect; Mary Miss, artist
Architect, design development/construction: Helfand Architects—Margaret Helfand, AIA, principal-in-charge; Martin Zogran, project archi-

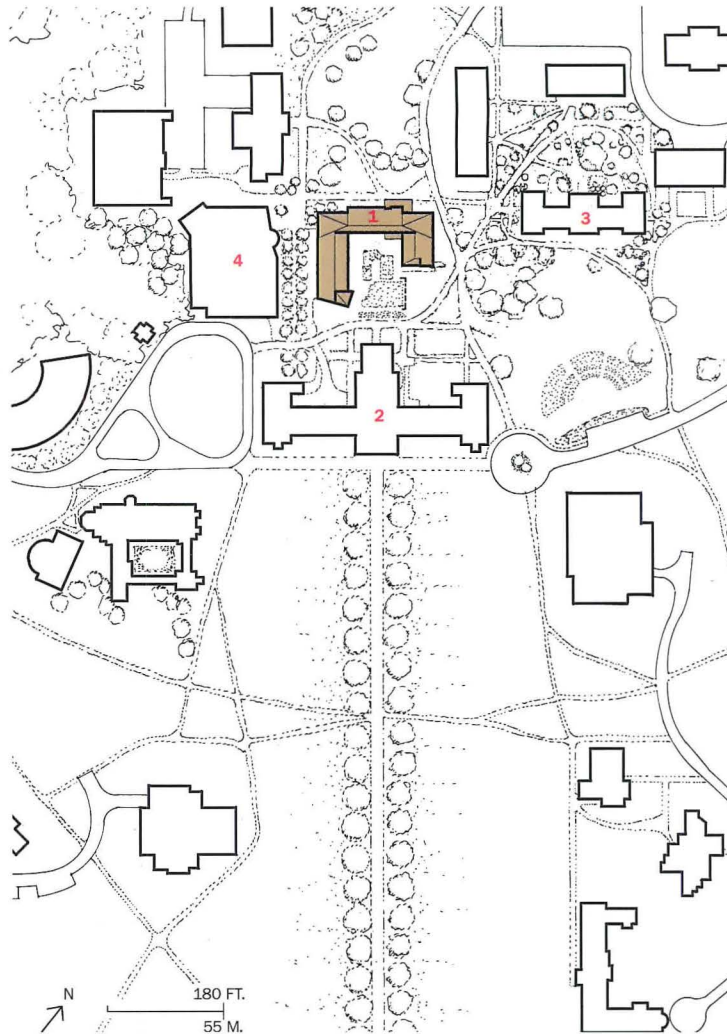
tect; Marti Cowan, project designer; Toby O'Rourke, Scott Carr, Scott Mahaffey, Meg Henry, Brenda Barnes, project team

Engineers: Christakis, Van Ocker, Morrison (structural); Syska & Hennessy (mechanical)
Consultants: Jerry Kugler Associates (lighting); Cerami + Associates (acoustical)

Construction manager: Lehrer McGovern Bovis

Kohlberg Hall is in the campus' center, completing an open quadrangle. Its U responds to pedestrian traffic.

1. Kohlberg Hall
2. Parrish Hall
3. Trotter Hall
4. Performing arts building





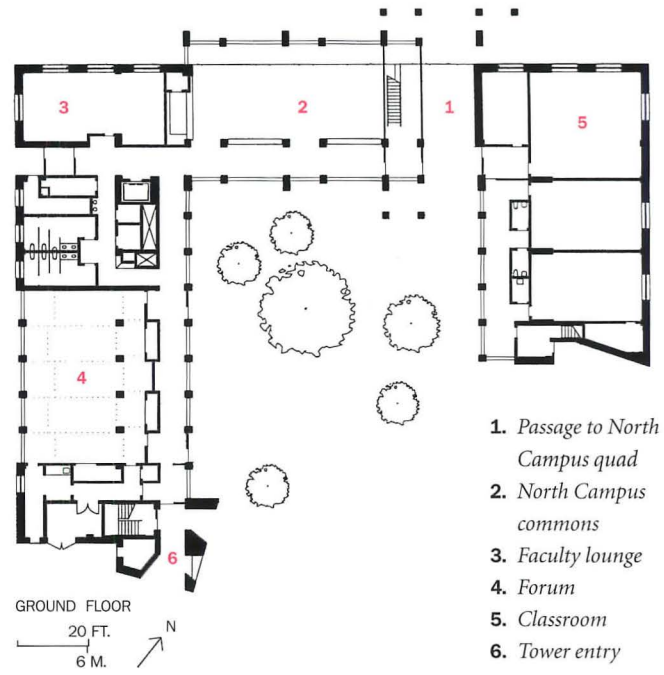
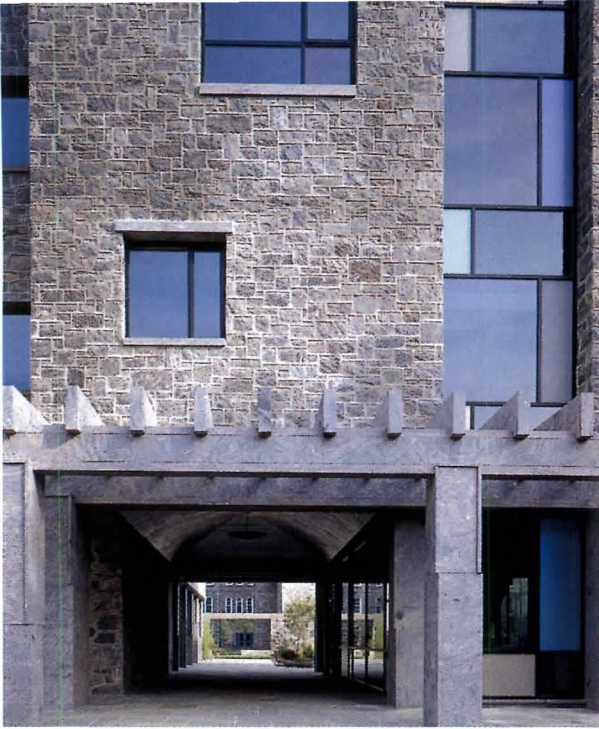
The 57,000-sq-ft academic building is a stone-clad steel-framed structure. The stone of the exterior was laid in a combination of random and rectangular patterns.





Kohlberg Hall gives the Swarthmore College campus an architectural focus it has always lacked, as the result of a rethinking and reconfiguration of

the heart of the school's campus. The building expresses the Quaker ideal of plainness without being awkward or dowdy. In fact, it is quietly stylish.



Dichroic glass contrasts with the stone (above). A covered passage weaves the building into the campus.

The main stair connects classroom areas. The forum and faculty lounge are on the ground floor, accessible from the colonnade. Helfand designed most of the furniture.

Stanton Eckstut, FAIA, and artist Mary Miss for creating, with her, a design that helps define several distinct outdoor spaces. Its footprint, a U with uneven arms, allows it to appear large and symmetrical where it serves as the side of a large quadrangle, to present a welcoming courtyard to those who arrive at a new automobile arrival point, and to respond to the diagonal path students take across the campus from the

dining hall and student center to the classrooms and dormitories beyond. A tower with a sundial at the long end of the U marks the entrance to the academic part of the campus. The space within this three-sided cloister contains the design's chief false note: a constructed ruin that outlines the footprint of the building that was razed for this project.

The ground floor contains the forum—a kind of campus living room—a faculty lounge, and a room for meetings, banquets, and other campus functions. The upper two floors have large classrooms in the base of the U, with offices and seminar rooms on its arms. Throughout the building, the corridors are generous, with built-in benches and nooks with easy chairs. “Getting away from everybody with a book is the Swarthmore image,” says Helfand, a member of the class of 1969.

Although the detailing makes it clear that the gray stone exterior is a veneer, it's a chunky 8-in.-thick veneer. On the tower and in the symmetrical north facade, it is set in an ashlar pattern, while on its less formal sides, the stone forms a cobweb pattern similar to its older neighbors. Slabs of pink and gray Minnesota granite accent the entrance of the tower and other spots, where slices appear to have been taken out of the mass of the building. “If there's one word that describes Quaker architecture, it's ‘sober,’” says Helfand. “We tried to achieve that by using traditional, durable materials, and by not applying any egregious decoration.”

There is, nevertheless, a sense of luxury that comes from the materials, which include large amounts of cherry paneling, slate floors, and gold tile that is used in a vaulted passage through the building and as an interior accent. Helfand also designed nearly all the furniture, including faculty desks, seminar tables, and overstuffed chairs in the forum. Like some of the old Quaker meeting houses nearby, Kohlberg Hall calls attention to its details in a way that flaunts not their elegance but their necessity. Where steel columns are clad in granite, for instance, the slabs overlap at the edges, to insist on their role as covering rather than structure.

While art history professor T. Katori Katao, who had Helfand as a student and pushed for her selection, sees these elements and the bright glass panels as examples of “surreptitious Postmodernism,” Helfand finds an educational purpose. “The students have come to understand that everything in the building is done for a reason,” she says, “even the goofiest things, like the holes in the seminar tables.” (They allow the students to plug in their notebook computers.) “It provides them with a kind of Architecture 101 to have this building to figure out.” ■

Manufacturers' Sources

Cobweb and ashlar granite panels and trim: *Strathaven Gneiss, Cold Spring Granite Co.*
Modified bituminous sheet roofing: *GS Roofing Products Co.*
Slate tile: *Natural Slate*
Aluminum fixed, casement windows: *Milco, Wausau*
Clear glass: *Viracon*

Dichroic glass: *Rudy Art Glass Studio*
Metal doors: *American Steel Products*
Wood doors: *Weyerhaeuser Co.*
Hardware: *Best, McKinney, Norton, Sargent, Rockwood, Epc*
Acoustical ceilings: *Tectum, Inc.*
Suspension grid: *Armstrong*
Resilient flooring: *Flexco*
Copper glass mosaic tiles: *Bisazza*



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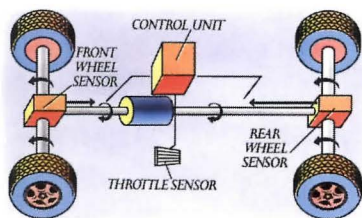
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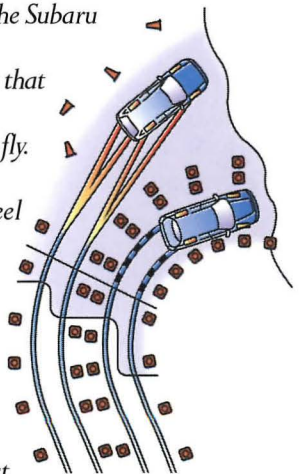
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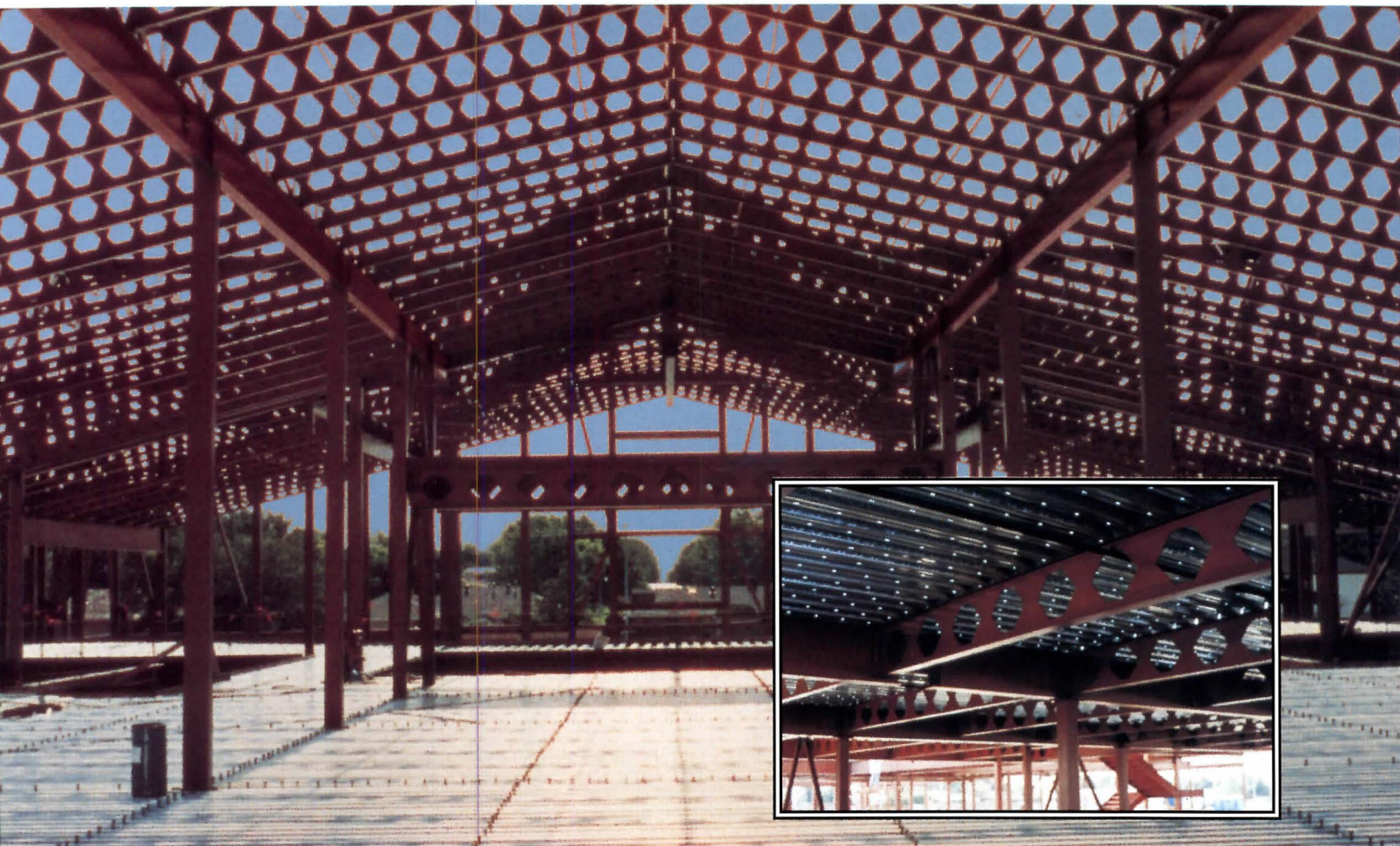
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CIRCLE 26 ON INQUIRY CARD



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The Latest Chapter in the Cabrini-Green Saga: Can Public Housing Be Reinvented?

THE CITY OF CHICAGO AND HUD THINK THEY CAN TRANSFORM A NOTORIOUS HOUSING COMPLEX INTO A SAFE AND VIBRANT COMMUNITY. THE STAKES ARE HIGH.

by Blair Kamin

Editor's note: This article is the first in an intermittent series that will follow the Cabrini-Green project as it goes through the long and, no doubt, convoluted processes of programming, design, approvals, and redevelopment. Called "the poster child of troubled public housing" by a HUD official, Cabrini-Green is an important test case that will have national impact on housing policy, urban planning, and the architectural profession. The size and scope of the plan now being debated make this redevelopment one of the country's biggest since the heyday of urban renewal in the 1960s. Architecture critic Blair Kamin, who has covered Cabrini-Green for the Chicago Tribune, provides an overview of the project and the issues at stake. Future articles will provide updates on the project and address a range of social, political, and planning issues.

Twenty-five years after explosives brought down three of the high-rises at the Pruitt-Igoe housing project in St. Louis and shattered the Modernist credo that good design could effect the good society, the curtain is about to rise on a new social housing drama in Chicago, and it will be watched anxiously nationwide.

Redevelopment could transform the notorious Cabrini-Green public housing complex—a three-quarter-mile-long stretch of high-rises populated almost exclusively by the poorest of the poor—into a neighborhood with a mix of uses and income groups, seamlessly rejoined to the rest of the city.

That, at least, is the happy-ending scenario, in which "project" becomes "community."

But anyone who thinks that this best-of-all-possible worlds will transpire easily or quickly is either a Panglossian optimist or an innocent unfamiliar with Chicago's bitter racial politics.

It can take years to endow troubled public housing with a semblance of normalcy. The task ahead will be even more difficult if, as some predict, welfare "reform" cuts off payments and renders thousands of people homeless.

There is a singular irony that this drama is unfolding in Chicago. The very city that gave the world the architectural glories of Sullivan, Wright, and Mies also has produced the nation's most night-

marish concentrations of public housing—the Poor House as well as the Prairie House.

With 3,200 units, Cabrini-Green is not even the largest or the worst of the city's projects. But located on the Near North Side, just a mile or so from Chicago's downtown Loop, it may be the most infamous.

The stakes in remaking Cabrini-Green are enormous, and not only for the project's 7,300 official residents, nearly all of them African-American, who fear that "redevelopment" is a code word for kicking them off their land.

Andrew Cuomo, President Clinton's choice to replace Henry Cisneros as Secretary of the U.S. Department of Housing and Urban Development (HUD), will need to show dramatic progress at Cabrini-Green if he is to persuade a hostile Congress to withhold the budget axe. Since 1995, when Cisneros approved a takeover of the scandal-plagued Chicago Housing Authority (CHA)—making Cabrini-Green a ward of the federal government—the Republican-controlled Congress has slashed the agency's \$25-million budget by nearly a quarter.

Surely, too, there will be repercussions for Chicago Mayor

Cabrini-Green sprawls before the skyline of Chicago (below).

Neglect and arson scar many buildings in the project (opposite).



Blair Kamin is the architecture critic of the Chicago Tribune. In 1995 he wrote a six-part series of articles for the Tribune, entitled "Sheltered By Design," that examined the problems plaguing public housing as well as ideas and methods that might make low-income housing a better place to live.

Richard M. Daley, son of the legendary "Boss." Last year, Daley assumed control of the redevelopment project from the housing authority and vastly broadened its scope in order to jumpstart the CHA's stalled, smaller plan. Encompassing 65 acres of prime land almost in the shadow of the black, truncated obelisk of the 100-story John Hancock Center, the redevelopment is thought to be the largest urban renewal effort in Chicago in three decades.

Cabrini-Green is "immensely important," says Marc Weiss, a special assistant to the Secretary at HUD. Cabrini, Weiss says, "is the poster child of troubled public housing."

Bring in the New Urbanists

So significant is the project that HUD, which has lately embraced the New Urbanism, tried to import the movement's leaders, including Elizabeth Plater-Zyberk of Duany Plater-Zyberk (DPZ) Architects and Planners in Miami, to lead a charrette. Instead, Daley co-opted the process and hired a team led by the Chicago office of Ann Arbor, Mich.-based planners JJR/inc. But if the New Urbanists lost that battle, they may have won the war.

The JJR team includes Boston architects Goody, Clancy & Associates, who used New Urbanist principles to shape the remarkable transformation of that city's Columbia Point housing project into a successful mixed-income complex known as Harbor Point. The charrette plan, the first step in a process that could see contracts for portions of the development let as early as this spring, follows a New Urbanist formula [see Update on last spread of this article].

For the New Urbanists, Cabrini-Green provides a chance to silence claims that their movement is largely concerned with upper-middle-income, suburban housing, masking sprawl in the town-planning traditions of yesteryear.

Whatever their formal inclinations, all architects arguably have a stake in what happens at Cabrini-Green. Rightly or wrongly, the outcome of the redevelopment will affect the public perception of architects as well as the profession's view of itself.

If Pruitt-Igoe spawned the myth that poor design caused public housing's woes, Cabrini-Green offers a chance to refute that falsehood. It also provides an opportunity to broaden the sense of social mission a select group of firms kept alive during the era of "starchitects" and mass-marketed tea kettles, birdhouses, cookie tins, and fish lamps.

That's assuming, of course, that all goes according to plan. In Chicago, it rarely does.

A year ago, expectations rose after 10 teams of developers and architects submitted Cabrini-Green redevelopment plans to the CHA—only to see nothing done after officials decided the scope of the proposals was either too small or that they did not provide enough public housing.

Aided by the delay, residents in October filed a lawsuit seeking to prevent demolition of more high-rises, a cornerstone of the CHA's



plan. As of early January, a federal judge had yet to decide the case.

What makes Cabrini-Green a subject of continual fascination is the way it butts up against some of Chicago's most affluent areas, including the so-called Gold Coast along Lake Michigan, as well as the boutiques of Oak Street, which cater to talk-show host Oprah Winfrey, the billionaire Pritzker family, and those who are merely millionaires.

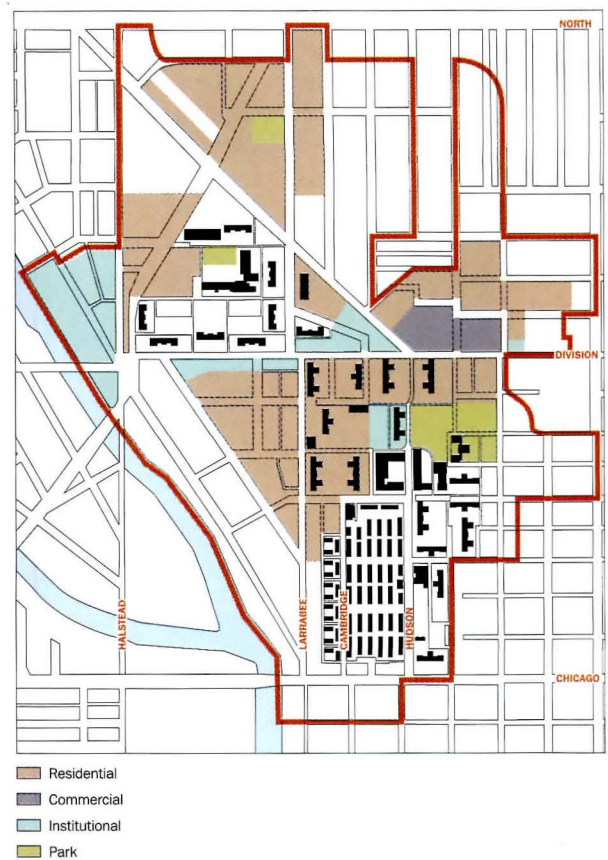
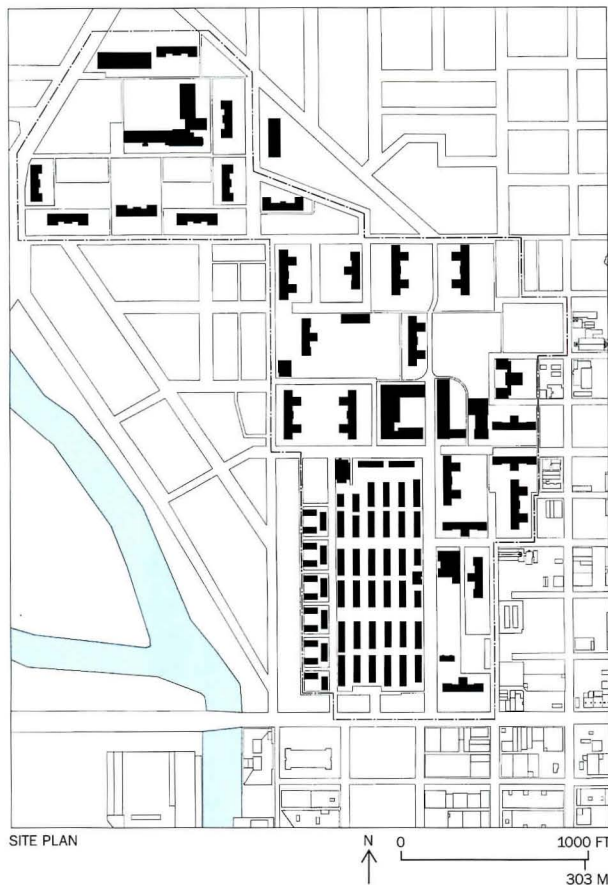
Location, location, location

Cabrini-Green is so close to all this, yet so far. Its physical isolation is palpable, with poorly stocked, overpriced grocery and liquor stores a short walk down aptly named Division Street from Starbucks.

The visible walls that fence off Cabrini-Green are snaking elevated tracks and dead-ends in the Chicago street grid; no one seems to know why they were put there, or when.

It is clear, however, that while Cabrini-Green is much talked about as a symbol of public housing, it is hardly typical. Very few public housing developments sit alongside such vibrant neighborhoods, offering them such a tightly woven urban fabric to which they can connect—the classic solution prescribed by Jane Jacobs in *The Death and Life of Great American Cities*.

Cabrini-Green proper occupies 9.3 acres on Chicago's Near North Side. The three phases of construction can be seen in bold on site plan (right) with the earliest barracks-like rowhouses at the southern end, the 15 high-rises known as "the Reds" in the middle, and the eight "Whites" at the top. Two of the high-rises shown here have been torn down. Area plan (far right) shows the 65-acre scope of the latest redevelopment plan.



Today—partly due to the rise of the suburban edge cities that did not exist when *Death and Life* was published in 1961, and partly as a result of the movement of jobs to inexpensive Third World markets—many projects are in “de-urbanized” areas, with scores of vacant lots and shuttered businesses. In such wastelands, like the one occupied by Cleveland’s fenced-in Renaissance Village public housing complex, there is nothing left with which to connect. Here, the New Urbanism ideal of weaving public housing seamlessly into the rest of the city is a fantasy.

Indeed, the history of Cabrini-Green offers contemporary architects and planners a cautionary tale of do-goodism and ideology destroyed by factors beyond their control.

“We thought we were doing . . . a lot of innovative design things, like putting open galleries on each floor so kids could play right in front of their apartments,” Cabrini-Green architect Lawrence Amstadter explained in a 1985 interview. “We didn’t foresee the kids throwing each other off them.”

Some historical background

Before there was Cabrini-Green, there was “Little Hell,” a Near North Side slum with vermin-infested, garbage-strewn alleys and dangerous streets in which residents endured a rate of violent crime 12 times that of non-slum neighborhoods. In the 19th and early 20th centuries, it housed successive waves of European immigrants: Germans, Irish, Swedes, and finally, Sicilians, before a typical urban-renewal drive began.

From 1941 to 1943, the Chicago Housing Authority constructed

55 barracks-like rowhouses and named them for Mother Frances Cabrini, a Chicago nun and the first American-born saint. To lower per-unit costs, however, the agency turned to high-rises. From 1955 to 1958, the CHA built the Cabrini Extension, 15 high-rises designed by Amstadter’s firm, A. Epstein and Sons. Placed in a parklike setting and ranging in height from seven to 19 stories, the buildings had exposed concrete frames with red-brick infill. They were literally poor man’s Mies, bereft of both the expensive materials and the uplifting spirit the master brought to the structurally expressive 860 and 880 North Lake Shore Drive apartment buildings completed four years earlier. Today, as if to underscore their monotonous, institutional quality, Cabrini residents call them “the Reds.”

Their counterparts north of Division Street, “the Whites,” eight high-rises with whitish-gray concrete frames, went up from 1959 to 1962. Fifteen and 16 stories tall, they were named for Chicago labor leader William Green and designed by Pace Associates. “The Whites” were poor man’s Corbu.

There are 65 to 144 units per high-rise, a density that worked well when the project was largely inhabited by the working poor, but proved troublesome as the percentage of jobless and desperately poor residents soared.

In its early years, long-time residents say, Cabrini-Green was a good place to live, with tightly enforced rules contributing to a sense of order. There were even fines for walking across the grass.

But the same things that did in other public housing projects

across the country wreaked havoc at Cabrini-Green—from federal admission rules that pushed out the working poor, to a lack of tenant screening and maintenance, to a rise in drug use and a loss of good-paying, industrial jobs.

Many of these factors were fomented by the real architects of public housing's demise—politicians and bureaucrats, both national and local—and they were compounded by a disregard for the Modernist ideals of light, air, and green space. When superblock open space was paved over, the tower in the park became the tower in the parking lot.

Nevertheless, the Corbusier-inspired tower-in-the-park model appears to have exacerbated fundamental problems: Its lack of defensible space, for example, enabled ground-floor lobbies to be turned into drug supermarkets. When children threw garbage out of open-air galleries, which the architects intended to be “streets in the sky,” the galleries were fenced in with chain-link, reinforcing the prison-like image of public housing.

Cabrini-Green entered America's national lexicon of infamy in 1981 when then-mayor Jane Byrne moved into an apartment to draw attention to the project's squalid conditions—only to see them worsen once the political stunt was over.

In 1992, a city grown numb to urban violence was stunned when a sniper hiding in a vacant 10th floor Cabrini-Green apartment shot and killed a seven-year-old resident, Dantrell Davis, as he walked to school holding his mother's hand. Children at Cabrini-Green called the open area where Dantrell was shot “the Killing Field.” Now, the building where Dantrell lived is one of eight targeted for demolition.

A bright new future or ethnic cleansing?

Daley's Cabrini-Green initiative was unveiled with great fanfare last June—at a City Hall press conference during which a color-coded map of the Cabrini area offered the illusion that the mayor's plan had been well thought-out. It hadn't.

In reality, the plan was little more than a zoning map, hurriedly put together by bureaucrats. Pressed for a cost estimate by reporters, Daley's chief planner pulled out of the air a \$1 billion figure, which was revised downward a few days later to \$700 million by the CHA.

Significantly, no residents stood with Daley as he made his announcement, and their lawyer labeled the initiative “ethnic cleansing.” Despite assurances from Daley and CHA Executive Director Joseph Shuldiner that no one will be made homeless, their leaders remain convinced that that is precisely what will happen. Even officials privately acknowledge the residents have reason to be skeptical, given changes to the welfare system and Congress' decision to eliminate money budgeted for new rent vouchers. “As bad as it may be [for the residents],” one says, “the alternative may be worse.”

Yet the significance of Daley's plan is undeniable. It is none other than the powerful mayor proposing to transform Cabrini-Green rather than some politically marginalized housing-authority bureaucrat.



The Corbusian idea of towers in a park has been subverted into towers in a parking lot, with abandoned cars dotting the landscape.

CHRONOLOGY

- **19th and early 20th centuries:** “Little Hell” area in the Near North Side is the precursor of today's slums.
- **1941-43:** Chicago Housing Authority constructs 55 barracks-like rowhouses named for Mother Frances Cabrini.
- **1955-58:** CHA builds the Cabrini Extension, 15 high-rises designed by A. Epstein and Sons. These seven-to-19-story-tall buildings are soon dubbed “the Reds.”
- **1959-62:** Pace Associates designs and CHA builds “the Whites,” eight high-rises 15 to 16 stories tall, officially named for labor leader William Green.
- **1981:** Mayor Jane Byrne and her husband move into an apartment at Cabrini-Green for a short time to draw attention to squalid conditions.
- **1992:** Seven-year-old Dantrell Davis, a Cabrini-Green resident, is shot and killed as he walks to school holding his mother's hand.
- **1993:** Residents agree to a plan that would allow the CHA to demolish three high-rises at Cabrini-Green.
- **1995:** Federal government takes over the scandal-plagued CHA. Two Cabrini high-rises are razed with a third marked for later demolition.
- **1996:** Mayor Richard M. Daley takes control of redevelopment plan for Cabrini-Green from the CHA and broadens its scope. Residents file suit to block razing of five additional high-rises, as proposed by the mayor. JJR/inc. and Goody, Clancy & Associates are hired to masterplan the project. A planning charrette is held in December.

Moreover, the initiative goes far beyond the borders of Cabrini-Green—in effect, knocking down the walls between “project” and “city.”

That represents a major shift, because the not-so-hidden agenda of public housing in Chicago has long been to isolate very low-income blacks from whites, as if the high-rises were file cabinets for the poor. The most chillingly visible manifestation of this policy is the nearly three-mile-long stretch of battered towers along the South Side’s Dan Ryan Expressway that includes the Robert Taylor Homes, the world’s largest (and Chicago’s worst) public housing project.

Redevelopment scope gets bigger

In addition to the original 9.3 acres within Cabrini designated for redevelopment, Daley’s plan takes in another 56 acres, including parcels controlled by the Chicago Park District, the Chicago Board of Education, and privately-owned plots the city would acquire. It envisions a low-rise mix of townhouses and flats, in which public housing units will be indistinguishable from those selling at market rates, plus new schools, parks, a police station, and stores. About 2,600 housing units are to be built, nearly 800 of them for public housing residents. The area in question is a little less than half the size of Chicago’s downtown Loop.

The redevelopment’s huge scope makes it a case of renewing urban renewal—a challenge to a generation of planners used to painting on much smaller canvases. But officials are at pains to describe the effort as a new kind of urban renewal, not only going beyond the single-use, dormitory syndrome that deadened public housing, but also including the poor in a predominantly middle-class neighborhood.

“This project will be a case study of how the government can move people out of public housing and into a community where there’s a place for them,” says Greg Longhini, a spokesman for the city’s planning department.



The plan that emerged from a recent charrette for Cabrini-Green borrows from certain New Urbanist principles, such as replacing superblocks with street grids. But according to those familiar with the new plan, it envisions significantly higher densities than those usually associated with the New Urbanism.

Led by the Chicago office of Ann Arbor, Mich.-based JJR/Inc., in collaboration with Goody, Clancy & Associates of Boston, the two-day planning session held this past

December was attended by about 30 people, including Chicago Housing Authority (CHA) Executive Director Joseph Shuldiner, an assistant to Chicago Mayor Richard M. Daley, and representatives from the U.S. Department of Housing and Urban Development, which took over the CHA in 1995.

Conspicuous by her absence was the lone resident leader invited, at the last minute, by city officials. Yet resident leaders, who have filed a suit in federal court to block further demolition of Cabrini’s high-rises, clearly had an impact on the planning and design process, which sought to flesh out Daley’s plan for thousands of housing units, as well as new schools and parks, and a relocated police station.

Announced last year, Daley’s plan expands redevelopment beyond the troubled housing project and seeks to attract residents from

different income levels. But making it work clearly isn’t going to be easy, given the many constituencies and public agencies involved. Turning Daley’s outline into something real, says Edwin Eisendrath, the HUD Secretary’s Midwest representative, amounts to nothing less than “a three-dimensional jigsaw puzzle.”

A key question is how to attract enough market-rate residents to pull the neighborhood out of poverty without the wholesale displacement of Cabrini residents. For residents, the problem is that only half of the 800 new subsidized units will be set aside for families making less than 50 percent of the area median income of \$51,300 for a family of four. The other half will go to those making 50 to 80 percent of the median—which excludes the vast majority of Cabrini-Green households. (According to the CHA, the typical Cabrini-Green family of four has an annual income of just \$4,000.)

Thus, it is easy to see why resident leaders fear being made homeless, even though officials promise that vacant Cabrini units will absorb tenants who do not qualify for new housing. Years of mistreatment by politicians and bureaucrats have created a pervasive climate of mistrust; the residents are saying, “Show me.”

Getting residents involved in the process

Job one for the city, planning spokesman Longhini acknowledges, is to fight the perception that Daley is trying to steamroll the residents and gentrify their neighborhood. Yet it will not help matters that city officials did not open the recent charrette to the public, unlike most of those run by New Urbanists. In addition, no residents participated, which will hurt politically and may hamper the designers because residents bring street smarts to urban design.

For example, when the Chicago Tribune organized an architecture competition for Cabrini-Green four years ago, the honor-

different income levels.

Planners sought to resolve the tension between creating a mixed-income neighborhood and gentrification by increasing densities—up to 40 housing units per acre instead of the 20 to 30 typically found in low-income housing projects. Their new plan calls for a mix of rowhouses, flats, and stacked duplexes, three to six stories tall, but no free-standing, single-family homes. There would be 2,600 housing units, 600 more than what Daley originally proposed.

Advantages of the higher densities include: a more solid urban fabric in the development area, a better chance to weave commercial activity into neighborhoods, and perhaps a way to defuse residents’ concerns about displacement.

The charrette plan will now be reviewed by government officials, public-housing residents, and other

interested parties. Development contracts may be put out to bid as early as this spring with a variety of developers, architects, and contractors getting different parcels on which to work. No target date for the beginning of construction has been set.

Until recent demolition eliminated 400 apartments, Cabrini-Green had about 50 units per acre. Because the charrette was largely a physical planning exercise and addressed social and economic issues only tangentially, it remains to be seen whether the charrette’s numbers game will turn out to be good politics and good planning.

Blair Kamin

able-mention-winning entry submitted by two girls from the project suggested blowing up one high-rise because it is “a very bad drug building” and putting stop signs near the Cabrini rowhouses because “many children have been struck by cars there.”

Money represents another obstacle. If the Midwest economy weakens, so will the now-robust housing market, affecting the development’s ability to attract middle-income tenants. A lack of capital could hinder the city’s ability to carry out the charrette’s mandate of reintroducing the street grid and building other infrastructure.

And while developers are building and selling \$250,000 town-

homes just two blocks from Cabrini, it may be something else to market such properties when buyers will be looking out the window at some of the most notorious public housing high-rises in America, where violent crime remains a part of everyday life.

In that sense, the Cabrini-Green redevelopment could not be more different than Goody, Clancy’s remake of Boston’s Columbia Point, which suffered similar problems as Cabrini, but was revamped all at once from 1988 to 1990, with a mix of renovation and new construction. As a result, would-be renters saw a complex from which the stigma of public housing had been erased.

At Cabrini, in contrast, that stigma will be omnipresent—unless the city and the CHA take dramatic steps to revamp the existing high-rises. When Daley announced his plans, CHA Executive Director Shuldiner promised they would be renovated. But according to people familiar with the planning charrette, no plans were made for the high-rises for fear of further alienating resident and their leaders.

The superbloc dilemma

Thus, the redevelopment appears enmeshed in a contradiction: To attract market-rate tenants, the most visible symbols of blighted public housing must be eliminated. But for now, politics dictate that the high-rises and their superblocs can’t be touched.

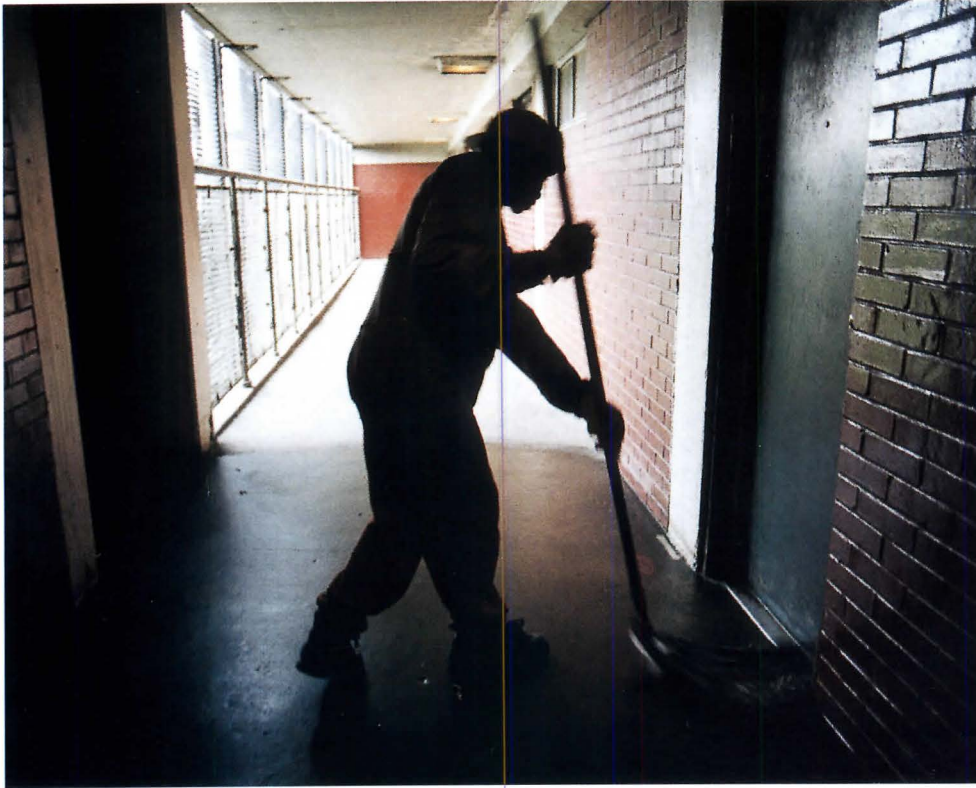
That would seem to split Cabrini into two camps: the old, tower-in-the-park project and the new, New Urbanist compound. How they will coexist over time—and whether they will be physically joined—is anybody’s guess.

As much as there is a sense of promise about the upcoming redevelopment of Cabrini-Green then, there also is an underlying dread—politics could easily scuttle the entire initiative.

Ultimately, the redevelopment’s success hinges on a socio-economic issue: Whether Cabrini-Green residents begin to join the mainstream of American culture. Will they be able to get—and keep—jobs? Will a social infrastructure of job training and placement centers be built to accompany changes in the physical infrastructure, as HUD officials have promised will happen?

Architects tend to fixate on the product of design. Yet at Cabrini, designing the process is equally significant, especially insofar as it can be adapted to the complexities of public housing, which differ from development to development, building to building, family to family. Similarly, the process ought to recognize the limits of physical planning, as the award-winning, low-income housing architect Christine Killory has suggested. “We are firmly committed to the proposition that architecture can change people’s lives,” she says, “but not everybody’s and not immediately and not on its own.”

Even if the New Urbanism helps transform Cabrini, it should not become the New Orthodoxy, applied without regard for costs and context. A quarter-century ago, the demolition of Pruitt-Igoe fed the American fantasy of wiping the slate clean and starting anew. Today’s political and fiscal realities demand a more sophisticated, non-ideological approach. There are different paths to the ideals of community and opportunity. ■



Elaine Logan lives with her son Jamuel and her two other children in a one-bedroom apartment where walls are crumbling and sewer gas fills the air (above). Junior Tiller mops the cagelike outdoor corridors (top).

Cuba

IN A NEW ERA OF FOREIGN INVOLVEMENT,
THE NATION STRUGGLES TO
PRESERVE ITS HISTORIC ARCHITECTURE

by Rachel Carley, with photographs by Andrea Brizzi

By air, the trip from Miami to Havana takes less than an hour, but anyone who has made the 90-mile journey across the Florida Straits knows that it is a deceptive measure of the real distance between Cuba and the rest of the world. Nearly four decades after the 1959 revolution that put Fidel Castro in power, this island republic of 11 million remains a country in painful transition, where the socialist ideal has failed to reconcile with the reality of deprivation. Despite significant gains in education and health care, the recent loss of Soviet subsidies and the cumulative effects of the U.S. trade embargo continue to throttle an economy already plagued by internal mismanagement. Entire towns seem to have sidestepped the currents of time, while the effects of neglect are everywhere apparent: paint peels, walls sag, storefronts stand eerily empty.

But scarcity, the great preserver, has also endowed Cuba with two prime assets—an unspoiled tropical landscape and a storehouse of remarkably intact historic cities, many founded in the 1500s. Throughout most of the revolutionary period, both have remained almost completely untouched by modern intrusions. However, since the 1990 onset of the so-called “Special Period in Peacetime” (the state euphemism for a time of extreme economic difficulty), the Cuban government has begun openly peddling these resources as part of an aggressive development plan that has made tourism the island’s fastest-growing earner of hard currency.

As a direct result of the push for foreign visitors, which generated gross revenues of \$1.25 billion in 1996, restoration activity has stepped up in historic centers, where an increasing number of colonial buildings are being renovated for income-producing restaurants and souvenir shops. At the same time, luxury resorts are starting to consume Cuban beaches at a staggering rate. Last year, 1800 new hotel rooms alone were slated for Varadero, the famous 13-mile-long slip of sand about 80 miles east of Havana, which claims the highest concentration of waterfront resorts, restaurants, and nightclubs in Cuba. By the year 2000, the Ministry of Tourism plans 25,000 more rooms for Varadero and 50,000 hotel rooms island-wide; the current annual rate of one million visitors to Cuba is expected to increase fivefold by the same date.

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Malecón, the waterfront of Old Havana, part of a 14 sq-block, \$50-million restoration project, partially financed by Spain.



This accelerated growth reflects a marked turnaround in state policy, which in the early years of the revolution openly denounced tourism as an overt symbol of imperialist decadence. Moreover, many of the restoration and new construction projects are joint ventures between the Cuban state and foreign firms that Castro has actively courted since the 1989 breakup of the Eastern bloc, which reportedly reduced Cuban trade by 80 percent. To date, Cuba has established commercial dealings with some 4,500 foreign companies, with enterprises from Mexico, Canada, France, Germany, Italy, Spain, the Netherlands, and other countries focusing on tourism projects.

But if such dealings suggest a surprising flirtation with capitalism, some regard gambling short-term revenues against the long-term care of Cuba's infrastructure to be the more perplexing paradox. "Now we are facing a critical contradiction," says René Caparrós, a spokesman for Cuba's national conservation organization, *Centro Nacional de Conservación, Restauración y Museología*, which is known by the acronym CENCREM. "We need the money and resources of other countries to survive and develop independently, but some of those outside resources could destroy part of our own." The size alone of some development projects, the work of vast design conglomerates, presage a serious environmental and architectural impact.

According to James Marston Fitch, an architect and leading North American preservation educator who has visited Cuba several times in the last 15 years—most recently in an advisory capacity—this

dilemma is commonplace in underdeveloped countries in need of hard cash and a window on the world. "Economic and social forces compel them to look to the reservoir of their built and natural world as their only active resource; and the more they look, the more they realize its value," says Fitch.

But Cuba is different, Fitch points out, in that the country has national legislation working in its favor. Indeed, by contrast to sporadic efforts by a few independent patrons before 1959, the revolutionary government has shaped a powerful legal mechanism designed to protect individual monuments, whole towns (including the seven original Spanish *villas*, or settlements, colonized between 1512 and 1515), and natural sites.

The national preservation program is administered jointly by the Academy of Sciences and the Council of Patrimony, a component of the Ministry of Culture, itself part of an extensive Council of Ministers. In addition, the current 1976 constitution contains two important provisions, Laws One and Two, which respectively define the "national patrimony" (the actual physical legacy of Cuban history, including art works and buildings) and the "national heritage" (a more abstract concept of cumulative cultural worth). The Havana-based CENCREM, which inventories and assesses the value of historic sites and sets national preservation strategy, was founded in 1982, the same year UNESCO recognized the international, historical and archeological value of Old Havana by declaring it a World Heritage Site.



Portions of Malecón, the waterfront jetty of Old Havana, undergoing restoration (above and right).

The former Casa del Conde Santovenia of 1784, which is now the Hotel Santa Isabel, in Old Havana, is being restored (top).

Old Havana's 18th-century Plaza de Catedral is a central tourist attraction (opposite).





COMMUNIST GOVERNMENTS HAVE INVESTED...ENERGY AND MONEY INTO HISTORIC PRESERVATION BECAUSE THEY SEE THEMSELVES AS THE LOGICAL INHERITORS.

In large part, this complex setup is a reactive measure against the rampant and often corrupt real-estate speculation of the pre-Castro 1950's, when several Havana landmarks were sacrificed to development projects designed, for the most part, to line the pockets of the Cuban bourgeoisie and foreign investors. It has made a significant contribution to protecting Cuba's assets, with new sites declared national monuments every year.

But signing the notion of Cuban patrimony into national law also reflects an important political motivation. Implicit in such legislation is the effort to establish a collective, or national, identity that is fundamental to Marxist-Leninist ideology and the populist support of a centralized government. Caparrós puts it succinctly: "Without cultural patrimony," he says, "there is no national identity."

According to Fitch, who has monitored preservation efforts around the world, this idea of "nationalization" follows a logical pattern. "Communist governments have invested a great deal of energy and money into historic preservation because they see themselves as the logical inheritors of the country itself," says Fitch. "This means not only socialization of industry, of education, of the economy," he maintains, "but also socialization of *history*." From the Cuban viewpoint, it follows that this history is theirs to save, or sell, as they see fit.

In moving away from the "elitist" preservation of isolated monuments, the Cuban state stresses a contextual approach to preserving "living cities," and architects invariably stress the need for comprehensive solutions that focus on the entire community. Old Havana (shown here and on the preceding pages) is a case in point. One of the most popular tourist destinations in Cuba, this section of the colonial capital covers the heart of the original walled city founded in 1514. A 214-hectare area (about 528 acres) containing 16th-century forts and some 4,000 buildings in Spanish Baroque, Neocolonial, and Art Nouveau styles is currently the subject of an exhaustive computerized study by the Office of the City Historian, which is preparing a detailed master plan for the district.

To satisfy a mix of needs for both foreign visitors and the Cuban community, structures are ranked into one of four levels according to their historical and physical value. High-level buildings are reserved for museums; the second level for hotels, schools, offices, and restaurants; and the two lowest, which can theoretically tolerate the most intrusion, are designated for housing. The *Office of the Historian* encourages local residents to participate directly in neighborhood rescue efforts, providing professional supervision, and when possible, materials. "We don't want a museum city," says Patricia Aloña Rodríguez, an architect with the Office of the City Historian. "We want people to live here."

Old Havana: Escuela Taller students (below). The restored Casa del Marques de Arcos (right).



Yet even the Office of the City Historian itself has gone into the business of tourism, overseeing all investment projects in Havana through its own company, Habaguanex S.A., which was founded in 1994 to generate hard currency independent of the state budget. Rather than funneling the profits back to the state, the Office of the Historian may reinvest income into new restoration projects, and also has control over the quality of the work—a decided benefit for this fragile area. Nevertheless, it is impossible for any visitor not to be struck by the glaring contrast that the area's empty lots and neglected buildings—where some 60 percent of Old Havana's population lives in slum-like conditions—make with meticulously restored 18th-century Spanish Baroque *palacios* housing cafés and restaurants rarely patronized by Cubans.

The phenomenon in which economic and social circumstances segregate a country's local population from foreign visitors—called "tourism apartheid"—is even more evident in such luxury resort areas as Varadero and the Monte Barreto section of Havana, where a state tourism plan has designated a \$300 million investment for 11 new hotels with 2,000 rooms. High prices and laws intended to curb prostitution effectively bar most Cubans other than employees from such resorts, which cater primarily to Canadian and European tourists. Furthermore, the design and management of these multimillion-dollar projects often exclude the same Cuban involvement regarded so important to preserving city neighborhoods.

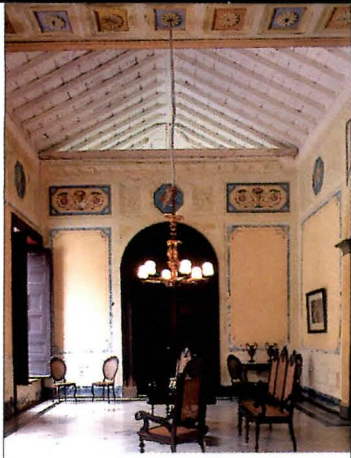
Management of the resorts traditionally goes to the more experienced foreign partner, even when the Cuban firms—which include Horizontes, Gran Caribe, Gaviota, and Cubanacan—put up more than one half the equity. The Canadian company Delta Hotels and Resorts, for example, has contracted to manage six Cuban resorts now owned by Cubanacan, Cuba's largest hotel chain. "We run them," says Marilott Bloemer, a spokeswoman for Delta. "But the bottom line was all theirs." While the Delta-Cubanacan hotels were conceived primarily by the Cuban state, foreign business partners frequently recreate resorts they

have already built elsewhere. The 1990 Hotel Las Americas in Varadero, started by a Mexican company, for example, has a virtual twin in Cancún. The 22-story, 462-room Hotel Cohiba in Havana—a bland steel-frame curtain-wall tower completed in 1996—was also built from an existing Spanish design, adapted to a waterlogged site with a special platform. Both hotels are now operated by Grupo Sol Meliá, a Spanish chain with 175 hotels in 20 countries on four continents and about 1,600 rooms and 400 bungalows in Cuba.

Cubans are divided between support and defense of the typically featureless hotel designs, which tend to overwhelm their sites while disregarding their tropical context and the local turn-of-the-century wood-frame vernacular architecture still standing in former fishing towns like Varadero. "It is easy to criticize these projects, but that is taking the wrong standpoint," argues Caparrós, who points out that all joint ventures are subject to an approval process that covers both size and distance from the water. "They may not be beautiful or practical, but they are successful," Caparrós maintains, adding that nearly one million Cubans benefit from the tourism industry through work in the hotels and related services.

But the architect Mario Coyula, subdirector of Havana's Group for the Integral Development of the Capital, which he co-founded in 1988 to promote responsible city planning, finds fault with the state penchant for large-scale enterprises that exclude local participation. "Why can you do business with a foreign country but not the Cuban people?" asks Coyula, whose group has criticized the Monte Barreto development for its density and short-sightedness. "Cuba needs small investments, but the state only wants the big guns." The reason? "The government is afraid of losing control."

Both men believe solutions lie partly in education. On a smaller scale, traditional building skills lost before the revolution are now being revived by groups like CENCREM, which provides multidisciplinary conservation training, and the *Escuela Taller*, a rigorous architectural



CASE STUDY

Founded in 1514 as the third of the original seven Spanish *villas* in Cuba, Trinidad is the island's "colonial jewel:" an impossibly unspoiled cluster of pastel-colored houses, tiled roofs, and Baroque church tow-

VIRTUALLY UNTOUCHED SINCE THE MID-1800S, TRINIDAD IS THE BEST-PRESERVED COLONIAL CITY IN CUBA

ers folded into the hills above the Bay of Casilda on the south central coast. In the late 1700s, the town built a thriving slave trade, supporting dozens of plantations in the nearby Valley of the Sugar Mills, then declined precipitously after the 19th-century independence wars destroyed the sugar market. As more centrally located cities moved into the 20th century, the former sugar capital languished, cut off from the only national highway by the rugged Escambray Mountains. Virtually untouched by development since the mid-1800s, Trinidad today is the best-preserved Colonial city in Cuba, due in part to a longstanding respect for the region's importance. "Unlike other towns, Trinidad didn't have to improvise a preservation tradition after the revolution," says Nelson Melero, an architect from the national conservation organization, CENCREM, who has undertaken a study of the area's historic forts. "It has always been there."

Both the 91-acre historic core (which contains 1,200 unmodernized structures from the 18th and 19th centuries) and the 217-sq-kilometer valley (the site of 73 plantation ruins) are protected as Cuban National Monuments and were together declared a UNESCO World

Heritage Site in 1988. But the same qualities that contribute to the historic value of Trinidad have also made it an inevitable magnet for tourists. Bus loads of visitors now arrive daily to explore the cobbled streets and museums, including two meticulously restored Creole palaces and the first Cuban architecture museum, founded in 1978.

To date, the 23-member Office of Historians, responsible for all restoration projects in the town and valley, has monitored a slow and sensitive maintenance program, emphasizing existing use and traditional building techniques. As a result, a decidedly authentic air hovers over the historic center, where tourist facilities are limited to a

handful of cafés. But the Office has less control over Playa Ancón, a spectacular beach a few miles out of town. Although only two seaside hotels (originally built for vacationing Cuban workers) have served visitors there for the past 20 years, aggressive development on other Cuban beaches suggests that this area risks a similar fate.

Until recently, Cuban historians claimed this would never happen. "For one thing, developers aren't interested in Trinidad because no



one has ever heard of it," said Melero during a visit there last June. "Also, the structure of the city won't allow it. This town has a deeply rooted population: People live here and they aren't going anywhere." But time may prove Melero wrong: Just a few months ago, construction began on a new hotel in Playa Ancón—a joint venture between

Clockwise, from top left: A restored interior; Trinidad overlooking Playa Ancón; locals and tourists; Trinidad's main square.

Cuba and an Italian firm—and a broader development plan by the Ministry of Tourism is also now reportedly in the works.



handcrafts program for high-school-level students. On a broader scale, the state has recognized the need for sound management studies and recently developed a national education program in this area with help from foreign experts. One consequence is a recent trend away from cheap package tours to so-called eco- or cultural tourism, designed to promote Cuba's rare plant and animal world and rich heritage of music, dance, art, and theater. Some new hotels are also scaling down to their sites, incorporating intimate bungalows tucked into village-like plans.

But Coyula emphasizes that no approach will truly benefit Cuba until the government decentralizes and invests in Cuba's real wealth: the population. "We have about three million people with college degrees, about 1.5 million intermediate technicians, and more than one million good skilled workers," he says. "But right now, 100 percent of the people are on welfare."

To get them off, Coyula advocates semi-private state and city cooperatives, including small restaurants, shops, and hotels that would pay taxes. This would allow the government, industry, and the local population alike to profit. He emphasizes the logic of returning a five-mile stretch of vacant Havana storefronts to retail use and suggests renovating pre-revolutionary villas in neighborhoods like Havana's Vedado—the site

of the towering new Cohiba Hotel—to create tourist accommodations ranging from modest bed-and-breakfasts to luxury inns. According to the architect, such endeavors would permit the country to move toward an "independent, self-sustaining socialism." The future is critical, says Coyula. "But instead of planning ahead, a revolution should always *be* ahead," he adds. "To fall behind is dangerous."

At some point, moving ahead will likely mean North American investment, now severely curtailed under the 1961 U.S. Trade Embargo. According to the nonprofit U.S.-Cuba Trade and Economic Council in New York City, legal commercial involvement between the two countries in areas including artwork, medical supplies, and communications amounted in gross value to more than \$500 million over the last two years.

In addition, several U.S. companies are engaged in legal non-controlling investments in third-country companies doing business authorized by a Treasury Department opinion issued in March, 1994. Cuba has no law forbidding U.S. investment or tourism.

Even aside from this, North Americans routinely travel to Cuba to lay the groundwork for potential post-embargo business: American lawyers and real-estate developers have attended international seminars



A restored street in Old Havana with the Church of San Francisco de Assis at left (top).

The 1950's Hotel Internacional, Varadero (bottom). Inside the church (right). Habana.





New Havana (left):
Hotel Melia Cohiba (at
left), Hotel Riviera (at
right), and a shopping
center in between.

New Varadero (below):
Hotel Melia Varadero
(top left) and Melia Las
Americas (top right);
cottages (bottom).



“THE NEW HOTELS MAY NOT BE BEAUTIFUL OR PRACTICAL, BUT THEY ARE SUCCESSFUL.”

offered by Coyula's Grupo, and the U.S. press has reported the presence of executives from several corporations in Havana, including the Hyatt and Marriott Hotel chains.

For their own part, American architects who have visited the island remark not so much on investment potential as on an extraordinary design context offered by an urban fabric that has escaped the unchecked expansion of other Latin American capitals. Indeed, Cuba possesses the most significant and varied concentration of tropical architecture in the Caribbean.

Throughout the island, colonial cities enriched by the late 18th century sugar boom preserve an array of buildings, including ornate Baroque churches with their original gilded altar pieces, Creole palaces distinguished by colorful murals and stained-glass windows, and modest homes of a brick-and-rubble masonry called *mamposteria*. “I expected to see another Puerto Rico or Dominican Republic,” says Donato Savoie, a New York architect who has researched traditional Antillean building techniques in Cuba for a project elsewhere in the Caribbean. “But I found a beautiful landscape without parallel anywhere. There is a sense that not only the cities but even the countryside is stopped in time—it's incredible to see it.”

Charles Warren, an architect who traveled throughout the island with the New York City-based Center for Cuban Studies last year, was also struck by the lack of intrusions into the landscape. “It continues to be a traditional city,” he says of Havana. “And it's not just that there is a well-preserved physical context; there is an overriding social context, as well.

You walk down the street and experience a street life that is unforgettably vivid, intimate, and engaging—and it probably hasn't changed much in a hundred years.”

Any hope by North Americans for opportunities to design and build in this remarkable setting was recently tempered by the tightening of the Trade Embargo under the Cuba Democratic and Solidarity Act passed by U.S. Congress in 1996. To punish foreigners investing in Cuba, Title III of the Republican-sponsored law, known as the Helms-Burton Act, has made it legal for U.S. citizens and nationals to sue in U.S. federal courts firms investing in property confiscated from them after 1959. The primary impetus for this legislation, overwhelmingly supported by the Cuban exile population in North America, is to topple the island's weakened economy—and with it the Cuban leader. However, many Cubans say Castro is firmly entrenched.

Although it has caused some delays, no foreign-financed tourism project has been cancelled due to the Helms-Burton Act to date, partly because most resorts are being constructed on newly developed lands. There is some speculation that U.S. trade restrictions might ease under a second-term Democratic administration.

Meanwhile, foreign companies do not wish to miss a rare opportunity to do business without competition from the United States. And while it remains unclear how deeply the socialist state is willing to indulge in capitalist enterprises, Cuba had already signed deals for 240 joint ventures with a total value of \$1.5 billion by late 1996, and continues to show every sign of staying open for business. ■

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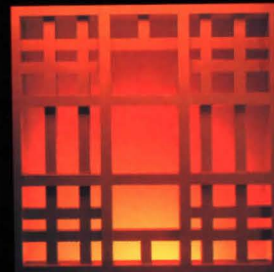
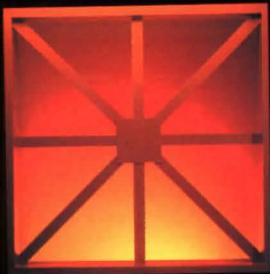
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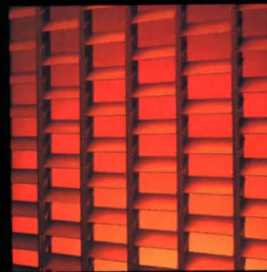
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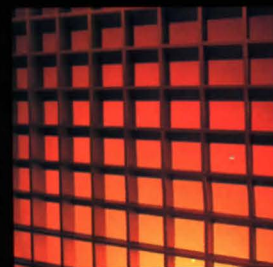
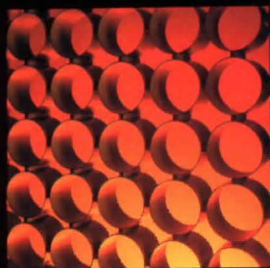
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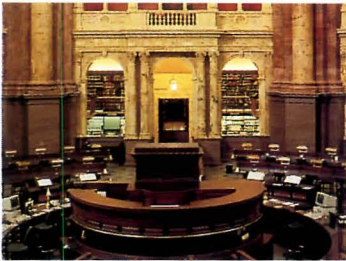
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PRESERVATION

The Ongoing Challenge

PRESERVATION FACES A HOST OF NEW ISSUES, SUCH AS HOW TO INTEGRATE IT INTO THE PLANNING PROCESS, PROPERTY RIGHTS, AND WHAT SHOULD BE SAVED.

by Andrea Oppenheimer Dean



1

Washington, D.C.

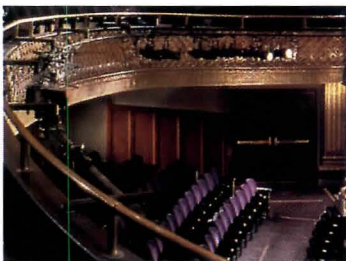
Architect Aurthur Cotton Moore lead the restoration of the Library of Congress, once called "the most beautiful building in America."



2

Baltimore

The Orchard Street Church was practically in ruins, before it was rescued by the Baltimore Urban League.



3

San Francisco

After being severely damaged by the Loma Prieta Earthquake, the Geary Theater underwent rehabilitation, including seismic upgrading and extensive modernization.

"At its best, preservation engages the past in a conversation with the present over a mutual concern for the future," William J. Murtagh, the first keeper of the National Register of Historic Places, once wrote. Today, historic preservation's goals and emphases reflect larger issues of our times, are helping to shape them, and are influencing contemporary approaches to planning and design. At the same time emphases that were important to early-20th century preservationists, such as the assumption that restoring historic buildings would promote good citizenship and patriotism, seem quaint today.

Devoted to saving high-style European-derived architecture and in the days when mainstream Americans still accepted the ascendancy of Anglo-Saxon culture, historic preservation has expanded its embrace to ordinary industrial, commercial, and even Modern-era buildings. It has also broadened its scope to encompass historic districts and to revive communities that once had historic significance, including commercial districts of smaller towns, urban residential neighborhoods, and the downtowns of larger cities. More controversially, preservation has also stretched its concerns to broader social issues, such as promoting cultural diversity.

The National Trust for Historic Preservation, under the leadership of Richard Moe during the last four years, has focused attention on sprawl, which Moe says is "to current preservationists what urban renewal was to an earlier generation." Preservation planning has become an integral part of local and regional growth management and of comprehensive planning processes, and Moe believes that Americans are increasingly aware that outlying areas cannot thrive if their inner cities languish. Urban planners, such as Jonathan Barnett, director of the City University of New York's Graduate Program in Urban Design, meanwhile, warn that writing off our inner cities is as costly as is suburbia's continual assault on the countryside.

In recent years, preservation has also become recognized as an engine for economic development, notably through tourism in a growing number of historic districts and heritage areas, which are regional entities defined by historical themes. But by mixing tourism and preservation, preservationists create a serious potential for killing the goose that laid the golden egg, warns Robert E. Stipe, co-editor with Antoinette J. Lee of *The American Mosaic: Preserving a Nation's Heritage* (The Preservation Press, 1987). Stipe fears that fragile historic neighborhoods will be physically overwhelmed by increasing numbers of tourists and that these neighbor-

hoods will be adulterated by a pervasive entertainment ethos that reduces everything to picturebook (or CD Rom) images.

The economics of preservation reflect a political climate that favors devolution of authority from the federal government to state and municipal governments and to the private sector. As government funds dwindle, Stipe believes, the cost of financing preservation will need to shift from taxpayers to private property owners through tax incentives. In fact, the Historic Homeowner Assistance Act was introduced in the 104th Congress and appears to have broad bipartisan support. It would provide a rehabilitation tax credit to owners of historic houses similar to the existing credit for income-producing properties. The National Trust's Moe says that the incentive "would do more for preservation in America than any other single thing."

Not surprisingly, along with preservation's recent successes has come a backlash in the form of a growing and influential private property rights movement, which insists that the imposition of almost any land-use regulation on private property constitutes a "taking" without compensation under the Fifth Amendment. In response, attempts are being made in more and more states to define the taking of property without compensation as any restriction that reduces the property's value. Ahead lie legislative struggles and court battles define how far a government can go in placing the preservation burden on private property.

Another problem arising from preservation's success is that in some areas the growing number of buildings deemed historic threatens to overwhelm the ability of already strapped and overtaxed state and local preservation offices to monitor and review construction. "The review process is already less crisp and therefore more difficult," says Howard Decker, a principal of the Chicago firm DLK Architecture, Inc.,

Preservation shifts toward science and technology

Others, including Hugh Hardy, who is leading Hardy Holzman Pfeiffer's complex reconstruction and restoration of the New York City's New Amsterdam Theater, chaff at sometimes counterproductive rules imposed by preservation bureaucracies. But that doesn't alter Hardy's enthusiasm for preservation, which, he believes, has become a familiar and basic part of most architects' practice. Much like consumer packaging, building recycling has become mainstream. The growing number of architects involved in preservation is matched by an explosion of new and readily available information and technologies and a growing cadre of specialists.

As a result, preservation architecture has become more sophisticated and more scientific. Robert Burley, of the Burley partnership in Waitsfield, Vermont, whose work includes the restoration of Frank Lloyd Wright's Taliesin at Spring Green, Wisconsin, says that once, "architects went into it from a adaptive-use, polish-the-door-knobs, bring-it-up-to-an-acceptable-condition standpoint." But designs that were often founded on guesswork in the past now benefit from improvements in documentation, in scientific procedures for dating and analyzing a building's materials. Newly available information is accessible in the form of drawings and other data on the Internet where the AIA, the National Trust, the Library of Congress, and the National Park Service's Denver Service Center all have web sites. Regulatory and review agencies, contractors and manufacturers' representatives are also ready with new intelligence.

Computers have, additionally, enabled many practices to develop their own databases, says Stephen Kelley, of Chicago's Wiss, Janney, Elstner Associates, Inc. His firm's analysis of the facade of the Nebraska State Capitol in Lincoln, for example, included the creation of a database with an entry for each stone. It will allow an accurate evaluation in coming years of how well the material is weathering. The information

can also be turned into drawings, and most firms now use computers to transfer drawings to clients, to regulatory agencies, and to consultants. What used to be a tedious process of creating measured drawings has been greatly simplified by computer imaging.

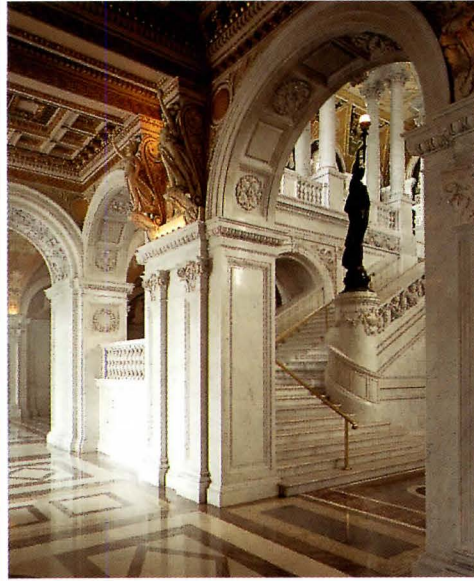
Also helpful to architects working on old buildings is a burgeoning crop of consultants. "We are more ready to draw on the historian, the building technologist, the preservation technologist," says Maury Childs of Boston's CBT/Childs Bertman Tseckares Associates. Even five years ago, his firm used consultants only for large or complicated projects. Today CBT calls on specialists to review technologies even in simple buildings, because clients and reviewing agencies "are increasingly eager to have a comprehensive set of inputs and have become more sophisticated and sensitive to various issues," he says.

Working with landmarks of Modern architecture poses perhaps the knottiest tangle of new problems and the challenges will multiply as more and more buildings reach 50, the age of eligibility for listing in the National Register. To begin with, how do you decide which Modern buildings should be saved and on what do you base the decision? Should we preserve the first, if architecturally insignificant, McDonald's restaurant because of its value as piece of commercial history? Decker suggests that "the challenge is not what we should save but what we should forget, especially since technology lets us remember everything." He points out that a related problem is that of the newer "baby landmarks," as he calls less-than-50-year-old buildings. Many are being altered, sometimes brutally. The interiors of some recent museums, for example, are being radically transformed to meet new programs. Does that make them less "authentic" and therefore less valuable? How should we judge authenticity when it comes to recent buildings? Can a building whose use has been changed be considered authentic? While we ponder such questions many Modern buildings are being lost because of their shoddy construction or use of unorthodox materials or grossly inefficient hvac systems.

Unsurprisingly architects working with Modern buildings often find themselves in positions similar to the one faced by John Vinci of Vinci/Hamp in Chicago, when he tackled the renovation of Frank Lloyd Wright's Wingspread in Racine, Wisconsin. The under-designed roof was further weighted down by thermal-pane glass that had been added in an earlier renovation. More vexing are the problems posed by early curtain walls: Most have become badly deteriorated from sealant failure, water infiltration, and the resultant oxidation and expansion of internal framing members. And then there is the fact that many Modern buildings used experimental materials and technologies that became obsolete after only ten or fifteen years. Carrara glass, for instance, was named for its resemblance to marble and was used on storefronts and in interiors. No longer manufactured, it is obtained today only through recycling, and then the match is often inexact. As a rule, architects deal with these and other problems on a case-by-case basis and seek help from experts.

Rehabilitating outdated modern buildings apparently inspired some architects, including Kohn Pedersen Fox Associates, to return to their modern roots. But that has been sidelight, for as the architectural critic and historian Vincent Scully told a gathering at the New York Landmarks Conservancy two years ago, historic preservation is "the only mass movement that has had a fundamental effect on the development of architecture...in the 20th century." He credited preservation for affecting "politicians and planners in the basic way that we now know all important architecture comes about, urban architecture especially: through the law." Preservation laws and regulations may be pesky, as architects know all too well, but the benefit of their accumulated effect is not in doubt. ■





On the stair leading from the Great Hall to the Visitors' Gallery, a marble mosaic of the Minera of Peace was restored (far left). A statue by Philip Martiny punctuates the Great Staircase (left). The architects restored elaborate vaulting, plasterwork, floors, and painted lunettes and tympana throughout the Thomas

Jefferson and John Adams Buildings of the library, while at the same time upgrading mechanical, electrical, and security services. The Northwest Gallery (below) and the Great Hall (opposite) recapture the original glory of the building.

en otherwise unrelieved facades, the architects projected pavilions at each of the building's four corners and in the center of the east and west sides. This scheme resulted in an interior arrangement characterized by long peripheral galleries leading to formal spaces.

To create an assortment of mosaic floors, murals, statuary, bas-relief, stained-glass windows, and other decoration, the 19th-century federal government commissioned more than 50 artists, many of whom had worked together on the World's Columbian Exposition of 1893. In fact, the library was the first major American building to reflect the vision of the Chicago World's Fair.

Crowding was a problem from the start, and by 1910 the building had expanded into the southeast courtyard. An Art Deco annex, designed by Pierson and Wilson and now called the John Adams Building, opened in 1939.

The commencement of the main building's current renovation depended on completion in 1980 of DeWitt, Poor, and Shelton's \$123-million James Madison Memorial Building, Washington's third largest building. The Classicist Modern structure's 2,112,492 gross sq ft of space enabled it to absorb more than 3,500 staff members who had nearly burst the bounds of the original library, now called the Thomas

Jefferson Building.

Moore led a team of eight consultants. Their efforts ranged from pure restoration through renovation to pure invention. Even in spaces such as the main reading room, the only major area that had not been subdivided or badly abused, they made significant—although largely invisible—changes. They hid new sprinkler heads and emergency lighting in Classical ceiling rosettes and molding. They concealed telecommunications cables in custom extruded-aluminum baseboards and had them faux-painted to match the originals of cast iron and mahogany. In some places they had mosaic flooring carefully removed so cables and wiring could be stowed underneath.

Thornier was the problem of creating a comprehensive, visually unobtrusive fire protection system for the reading room, which, Moore says, had been "protected by a couple of hand-held fire extinguishers." Before agreeing to the recommendations of a fire-protection consultant who insisted on compartmentalizing the room with glass partitions—and ruining it—Moore consulted a second expert who helped devise a system of sprinkler lines that inconspicuously follows the arched openings of the alcoves around the octagonal central space.

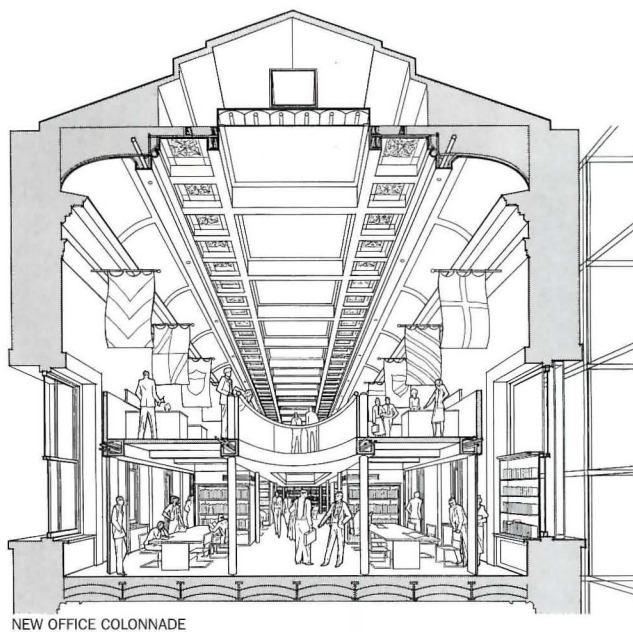
Among the library's several

courageous acts, says Moore, was a decision to replace the reading room's card catalogue with computers, which made space for 44 additional reader desks and brought the total to 226. The architect and his team also arranged for the removal from the center of the

room of a large "snorkel," as he calls the air-conditioning structure that sprouted from the floor and hovered over the reference desk. In addition, they inserted carpeting to dampen sound and a glass-enclosed, mezzanine-level viewing area to hush the voices of tourists.



New office colonnade (section, right) and mahogany "facade" in reading rooms (below). Restored dome above main reading room (bottom left); stained-glass skylights over the Great Hall (bottom right); and various corridors and rooms (opposite).



NEW OFFICE COLONNADE

Much of the work consisted of straightforward restoration. On the ground-level West Main Pavilion (also known as the Great Hall), for example, the restorationists returned yellowed columns and grimy murals and detailing to their original colors. A few steps away in the Congressional Reading Room, they stripped away sheet rock concealing outmoded mechanical equipment and uncovered a balcony. And throughout the building

they restored woodwork, mosaics, desks, lighting fixtures, and other hardware, while more than 20 conservators cleaned and restored murals and stone and plaster architectural detail, including a variety of putti, eagles, dolphins, griffins, and other creatures. They also restored numerous homilies that served as guides for life in the 19th century but now seem as old-fashioned as the horse and buggy. Meanwhile, preservation architects Einhorn,

Yaffee, Prescott assumed responsibility for the replacement and restoration of the building's windows. Moore estimates that overall, about two-thirds of the work consisted of pure restoration.

In contrast are Moore's solutions to the problem of containing office space to prevent the reappearance of warrens. They fall into the category of invention. He says he persuaded the library's administrators to designate many of the formal spaces as dedicated public areas and off-limits for office use.

At the same time, he says, he "reactivated" the concept of a set of subordinate reading rooms that have adjoining office space for scholars and staff. The architect carved out three identical book-lined and balconied reading rooms. The African/Mideastern and

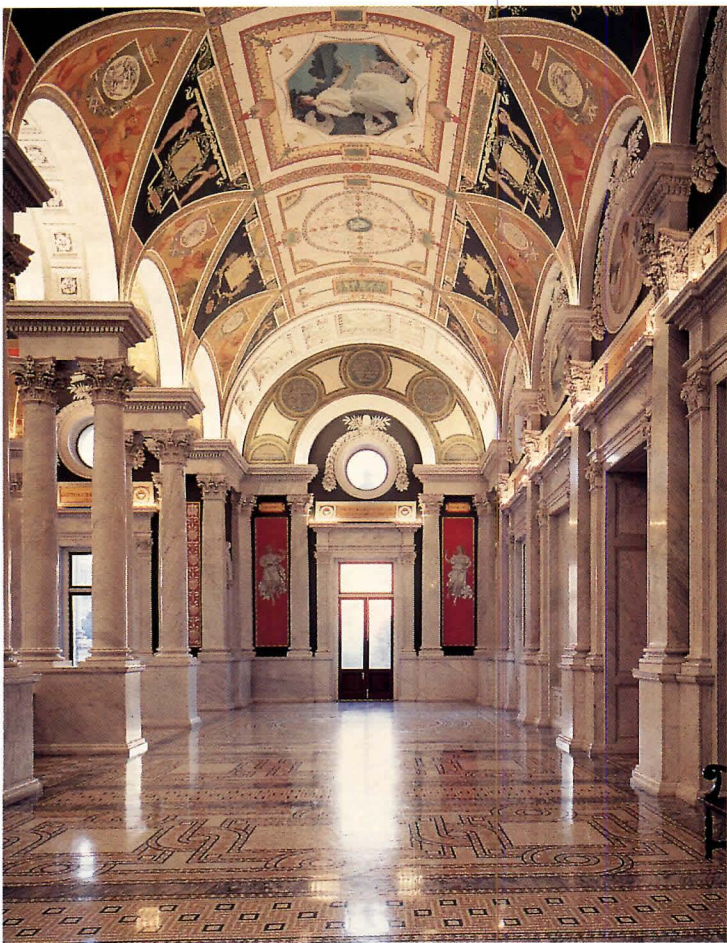
European rooms occupy galleries on the second floor. The Asian room is located in a first-floor gallery. Each reading room is subdivided by angular bookcases that double as ladders providing access to the books.

The dominant architectural feature in each reading room, however, is a mahogany "facade." It separates the study areas from adjacent two-story steel structures containing 3,570 sq ft of office space, "buildings within a building," as Moore says.

The facades take their cues from a Baroque commemorative arch on the first floor but also recall Moore's Postmodern buildings of the 1980s (such as Washington Harbour). The open space behind the facades will be partitioned according to need, using vertical tube-like supports to accommodate cables and other services.

On May 1, the date of the library's official reopening, the public will get its first glimpse of Moore's restoration and of his inventions. The exhibition "Treasures of the Library of Congress," will mark the occasion. And as is appropriate for an institution that is preparing itself for a new century and already records almost a million electronic transactions every working day, the exhibit will be available online at <http://www.loc.gov/>. ■





2 Orchard Street Church Baltimore, Maryland

NEWLY RESURRECTED, THE HISTORIC BUILDING CONTINUES ITS ACTIVE ASSOCIATION WITH BALTIMORE'S AFRICAN-AMERICAN COMMUNITY.

by Charles K. Hoyt, FAIA

Project: Orchard Street Church, Baltimore, Maryland

Client: The Baltimore Urban League—Roger I. Lyons, president and chief executive officer

Architect: Kelly, Clayton & Mojzisek—Brian Kelly, AIA, partner-in-charge; George L. Mojzisek, preservation architect; E.H.D. Ching Stanton, project architect

Associate architect: Anthony N. Johns, FAIA

Engineers: Resti Designers, Inc. (structural); EGLI & Gompf, Inc. (mechanical and electrical)

Consultant: Mahan/Rykiel Associates, Inc. (landscape)

Program manager: Heery International

General contractor: Stuever Brothers, Eccles & Rouse, Inc.

The Orchard Street Church in Baltimore, where freed slaves and their descendants prayed for nearly a century, will continue serving the African-American community, although in a different capacity, thanks to the rescue efforts of the Baltimore Urban League. The church, abandoned 20 years ago, is being restored as a community center by joint-venture architects Kelly, Clayton & Mojzisek (KCM) and Morgan State University architecture chairman Anthony Johns.

Background

The present structure dates from 1882 and is the third church on the site. All three were built by free African Episcopal Methodists starting in the early 19th century. The Baltimore Urban League, the oldest African-American service and advocacy organization in the city, will use the building to house many of its workers, and for meetings, exhibitions, and educational programs.

The 1882 church was designed by architect Frank Davis. He worked in exuberant high-Victorian eclecticism, applying a free-wheeling mix of elements to the brick-bearing-wall, wood-and-steel frame structure. The interior of the ambitious 8,000-sq-ft edifice was much plainer. The floors and pews were hand-hewn pine. Flat plaster walls lacked the raised molded ornament popular in the period.

In 1903, the congregation more than doubled its floor space with a new Sunday-school wing in back of the sanctuary. For the school's design, the construction committee turned to another fashionable Baltimore architect, Francis Tormey. He produced a three-story structure containing two floors of classrooms and, on the top floor, a double-height auditorium. Clearly the church's fortunes had risen. Wood trim throughout was first class, and the auditorium had a richly decorated plaster ceiling.

But some 20 years ago, the congregation had outgrown even the expanded building. It celebrated a last service in its historic home and, after a final hallelujah, slammed shut the massive wood doors, some thought forever. The flock moved to a new, larger home two miles away. Soon, new tenants moved in—the homeless. They built

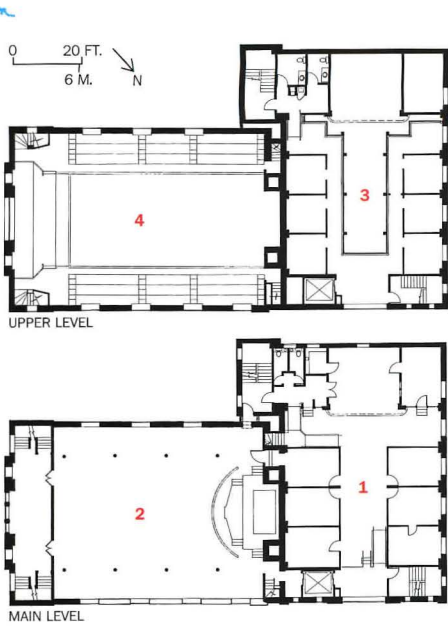
fires on the floors to stay warm. Windows broke and sections of roof collapsed. For the next 17 years, the building continued to disintegrate as various organizations, including other churches, struggled to raise funds to save it.

The current client

Enter the Urban League, whose 200 workers occupied windowless space in the basement of a shopping center. League president Roger Lyons was quickly developing a broad range of community offerings; he needed more space. And, as he enthusiastically led his board of directors through Orchard Street's charred remains, he also saw how the building's continued association with African-American causes could benefit the League.

Lyons and his board put together a complex package of state, federal, and private funding





1. Executive offices (classrooms and administration below)
2. Sanctuary (mechanical below)
3. Mezzanine level of executive offices.
4. Balcony and choir loft in sanctuary

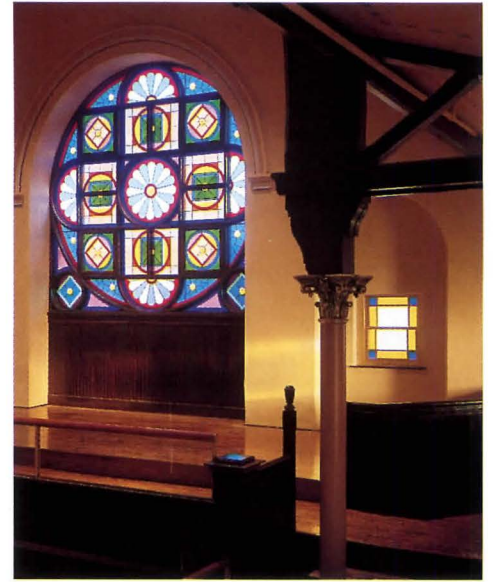
The building's desperate state when the Urban League took it over (opposite left)

showed few signs of hope except for the organization's bright equal-opportunity flag.

Major additions include the simple forms of the Sunday school (below)



Much of the architects' work involved restoration and replication—even using rough-hewn carpentry to match the original in the sanctuary (this page). Interpretive-design in this room included leaving originally painted wood trusses exposed (below), rendering them a dark, dominant design element in contrast with the walls.



During construction, workmen discovered a tunnel, not two feet across nor high, once connected with a Catholic monastery a block away as part of the underground route for escaped slaves. Today there is a viewing area into the tunnel (right) under the Sunday school. The rusting chains of the stair railing are symbolic as are the rough-formed walls.



for the \$3.7-million restoration. The League's procedure to complete the task was well considered. Heery Project Management, a division of Atlanta-based Heery International, Inc., was commissioned to draw up a design RFP, attracting more than 50 applicants. KCM and Morgan State's Anthony Johns got the job.

Existing conditions

Despite the existing shambles, KCM's team, working with Heery and general contractors Struever Brothers, Eccles & Rouse, was able to discover far more about the original building than at first seemed possible. Only several feet of plaster remained on the Sunday school's auditorium ceiling; it was enough to piece together the original design. Core samples of the remaining plaster in the sanctuary were examined with a spectro microscope to analyze the original decoration under many coats of charred paint. This revealed that Davis had compensated for the room's plainness with color—purple columns to support the sanctuary mezzanine and ocher walls highlighted by stenciled patterns of red, mauve, silver, and aqua. Shards of colored glass left dangling in the missing rose window over the alter contained enough evidence to trace the design to a standard pattern of the era. The replacement glazing required pieces fired as many as seven times.

New work

KCM partner Brian Kelly believes some interpretive-design during restoration best underscored Davis's original intentions by giving the building a stronger character (caption opposite). Excavation to shore up foundations under the Sunday school revealed the biggest surprise. The architects confirmed the legend that an earlier 19th-century African Episcopal Methodist church on the site was a link in the underground route for escaped slaves (caption above).

Because of the client's needs, some architectural work went beyond restoration into redesign for adaptive reuse. Morgan State's Johns worked side-by-side with KCM's team members to produce preliminary designs for this new work. The greatest design challenge came in locating the new classrooms and headquarters offices.

The architects' recommendation was that the first two floors of the Sunday school be used for the new purpose because they had always been divided into separate rooms. Original woodwork could be rescued and matched where missing. But these floors offered only 5,000 sq ft of space—not nearly enough to house the League's 200 full-time workers as well as educational programs and other activities that were to draw up to 600 visitors a day into the former school.

Challenges

The solution that delighted the League's board presented major problems for the architects. It was to use the double-height top-floor auditorium on the third floor of the Sunday school to accommodate the executive offices and make up the rest of the needed floor space. The plan called for turning the stage into a board room and placing offices in the former seating area. The possible number of offices would be doubled by placing them on two levels created by building a new mezzanine. But the visual impact of the mezzanine when seen from the outside of the building risked running afoul of the Maryland Historic Trust. The Trust had to approve the authenticity of the exterior renovation to qualify it for tax credits.

At the same time, the League board wanted to enlarge a small original window at the back of the stage to bring more daylight into the boardroom. But a new window would create a definite impact on the exterior's integrity. While not entirely satisfied with the mezzanine, the Trust members agreed to approve it as an exchange for retaining the small window. Lyons says that KCM's ability to negotiate the trade-off was an example of how the architects continued to build the board's trust during the course of the project.

Result

While the board wanted the sanctuary faithfully restored to its original character, it intended to install an educational museum of African-American history in the space. But the space is becoming so popular for meetings, social events, and temporary exhibits that the board may give up the idea of a permanent installation. Similarly, the fellowship hall downstairs was to be divided into vocational training spaces, but it is being used for so many community events that the league has transferred vocational training to its former offices; the hall remains one room. Typical of any restoration, fine tuning goes on in Orchard Street Church over a year after substantial completion. ■

Manufacturers' Sources

Brick: Baltimore Brick

Asphalt shingles: Certain Teed

Windows: Pozzi

Glazing: PPG

Hardware: Schalge

Pressed-metal ceilings: Chicago Metallic

Paint: Benjamin Moore

Plastic laminate: Formica

Hydraulic elevator: Dover

Plumbing fixtures: American Standard

Statistics: Building area: 29,000 sq ft
Cost of renovation: \$3.7 million

Geary Theater San Francisco, California

A FAVORITE SAN FRANCISCO THEATER MAKES AN ENCORE PERFORMANCE

by Stanley Abercrombie, FAIA

Project: Geary Theater, San Francisco, California

Owner: American Conservatory Theater

Architect: Gensler and Associates/San Francisco—Charlie Krider, AIA, partner-in-charge; R.K. Stewart, AIA, project director; Brian Shiles, AIA, architectural designer; Luke Sheridan, project architect; Corey Creath, AIA; Jennifer Galvin, Michele Sheehan, Kelly Griffin, project team

Engineers: SOH & Associates (structural); Cammisa & Wipf (electrical); Guttman & MacRitchie (mechanical)

Consultants: Theater Projects Consultants (theater); Page & Turnbull (historical); Conrad Schmitt Studios (historical research); Deborah Cibulich (interiors); Paoletti Associates (acoustical) Auerbach and Glasow (lighting); Esherick, Homsey, Dodge & Davis (preliminary design)

Construction manager: Cahill Contractors

It must have seemed like a scene from Phantom of the Opera, but it was no illusion: the steel light-bridge spanning the front of the stage swung crazily over the orchestra and fell, bringing with it most of the proscenium and a large part of the roof. Fortunately, it was a couple of hours before the evening audience would have begun arriving; it was October 17, 1989, and the cause was the Loma Prieta earthquake.

An illustrious past

The Geary, host to such legends as Sarah Bernhardt, Paul Robeson, and Lawrence Olivier, and, in the 1960s, the musical Hair, has been home to the American Conservatory Theater (A.C.T.) for the last three decades, and on the National Register of Historic Places for the same period. The structure was built in 1910 as a replacement for an earlier theater destroyed in the earthquake of 1906. Its designers were the firm of Bliss and Faville, who practiced in San Francisco from 1898 to 1925. Other work includes the nearby St. Francis Hotel. Partner William B. Faville, trained in the office of McKim, Mead & White, was national president of the AIA. Stanley Abercrombie is a Fellow of the AIA and the American Academy in Rome. He is former editor-in-chief of three design magazines and holds awards for both design and journalism.

Repairing the damage

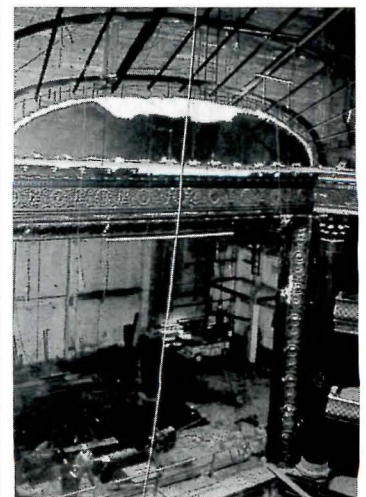
From the Geary's wreckage has now risen a largely new theater, combining assets of the Beaux-Arts original with features never imagined in 1910. It is the work of Gensler and Associates Architects, based partly on 1990 preliminary studies by Esherick, Homsey, Dodge and Davis.

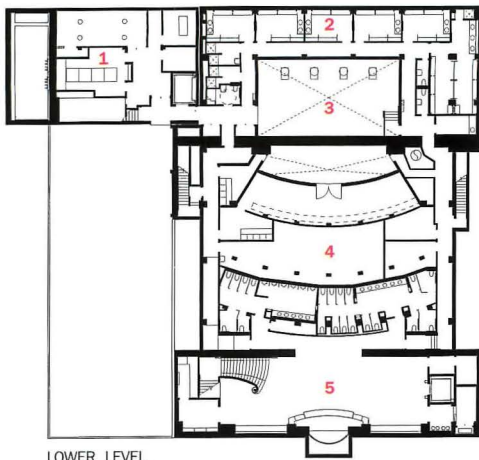
Gensler's first charge, according to project director R. K. Stewart, AIA, was seismic upgrading. This was accomplished primarily by the insertion of three transverse-shear elements: steel bracing added to the back wall of the stage, reinforced-concrete shear walls at each side of the proscenium, and a new 22-in.-thick shear wall, from footing to rebraced roof, between the auditorium and the front of the house. The disadvantage of the location of this new superwall is that it reduced the auditorium size from 1,380 seats to 1,035; the advantage, however, was that the lobby could be made more expansive and an entirely new upper lobby (with bar) could be carved out of the building shell. In any case, the seats lost were those deemed least desirable and least often sold.

Safety and ADA

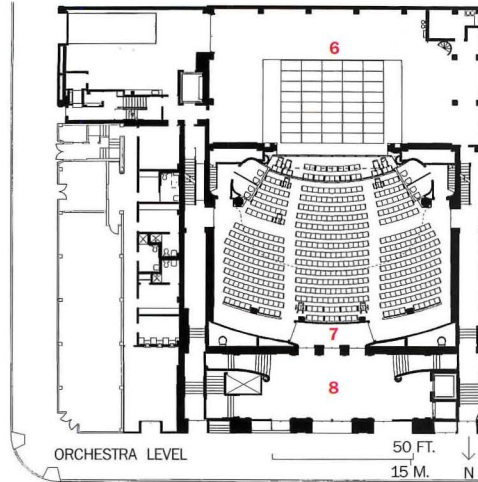
A second charge, according to Stewart, was safety and accessibility. Added to the landmark structure are sprinklers, alarm bells, visual

warning devices, elevators (both front-of-house and backstage), ramps, and wheelchair seating areas at the front and rear of each level. "We followed the spirit, not just the letter of the ADA requirements," Stewart says. Function has also been improved. For the patrons, the seating (most was existing, but repainted, reupholstered, and relit) has been given a new staggered placement, with increased leg room, wider aisles, and generally improved sight lines. Two quite grand stairways from the lobby have replaced older "dingy" ones, the ceiling height of the lower-level lounge has been raised (by lowering its floor level), the upper-level lounge has been created from scratch, and an infrared listen in system has been installed.

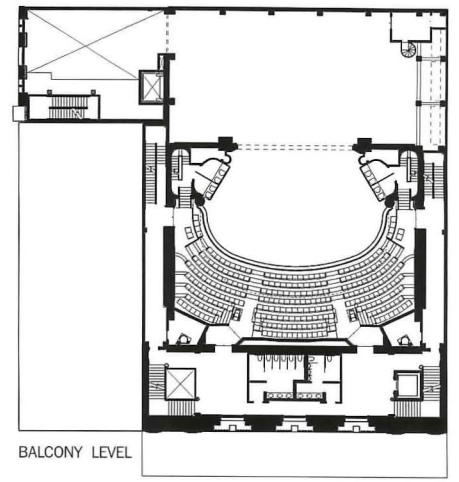




LOWER LEVEL



ORCHESTRA LEVEL



BALCONY LEVEL



1. Support
2. Dressing
3. Trap
4. Storage and mechanical
5. Lower lobby
6. Stage
7. House
8. Street lobby

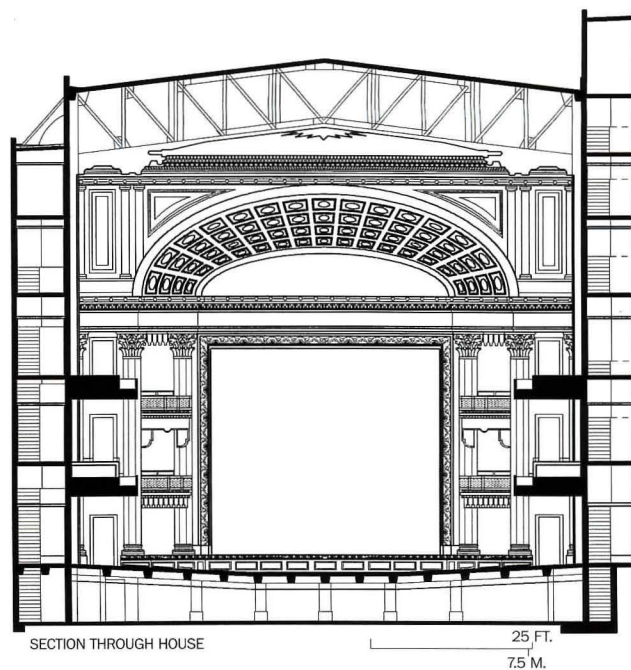
The exterior facade on Geary Street was considered inviolate, and the work there was limited to cleaning, and repairing the windows and the terracotta surfaces.





A steel fly grid (left) and counterweighted rigging replaced the old backstage equipment, that used a wooden grid, ropes, pulleys, and sandbags.

Based on vintage photographs, and painstaking research to determine paint colors, details in the auditorium (opposite) including the proscenium and a gilt wooden sunburst light fixture, were duplicated.



A modernized backstage

Other improvements are hidden but numerous: a hydraulically operated orchestra pit, backstage equipment, new dressing rooms below the stage, a new scenery loft (with its own elevator) beside the hydraulically-rakeable stage, a new control booth at the rear of the top balcony, and modern air conditioning and lighting. This last, most obviously represented by two lighting standards snuggling against the great Corinthian columns that frame the stage, has been made as unobtrusive as possible, but is unfortunately far from invisible.

But the most intangible and the most demanding part of A.C.T.'s program for Gensler was to "keep the magic." The Geary was famous for its acoustics and its intimacy, a favorite with actors and public alike. Reopened just over a year ago, it still is. The acoustics, while admittedly not perfect from every seat, are still admired, and the decreased distance from stage to last row of seats has even increased the theater's intimacy. But another important factor in the Geary's "magic" is visual, with part of its present appearance faithful to the original, part of it new.

Interior work

Inside the auditorium, as well, the past prevails. Relying on vintage photographs, the Gensler team has

reproduced in glass-reinforced plaster the splendid proscenium, a gigantic version of an egg-and-anthemion molding, and overhead the great central lighting fixture, a sunburst of gilt wood, has been rebuilt. Decorative details throughout have been carefully reproduced, including some wood wainscoting added in the 1930s. Original paint colors were unearthed by the detective work of the Conrad Schmitt Studios of Wisconsin, and these hues—red, gold, aubergine, and mauve—have been reused, but in the softer tones appropriate for today's lighting and today's taste.

In the newly reconfigured lobby, original elements (such as door and window frames) happily coexist with modern ones, and in the new bar area on the mezzanine above everything is freshly conceived. The carpet patterns, the



boldly scaled pendant lighting fixtures and tall torchères, the spirited scrolls of the stair parapets and railings—details that Stewart attributes to interior designer Debra Cibilich—manage the trick of appearing new but not irrelevant to the grand flourishes of the 1910 Beaux Arts Theater. ■

Manufacturers' sources:

Seating: Kroll Furniture

Flooring: Brinton's (carpeting)

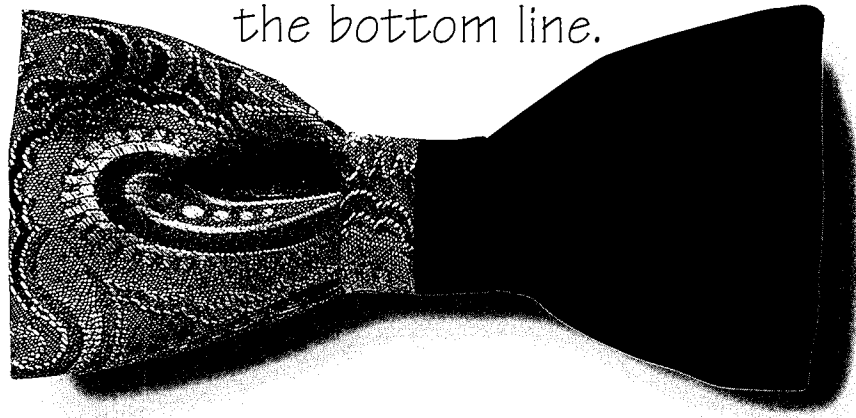
Light fixtures: Shaper Lighting; Edison Price; Prescolite; B.K. Lighting; Litelab; Nova; LSI; Visa Lighting; Bega

Statistics: Cost: \$27.5 million

Square footage: 54,000



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ARCHITECTURAL RECORD



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Continuing Education Series

SPECIFYING WOOD WINDOWS AND DOORS:



Specifying windows and doors from a manufacturer was once an easy task. After all, windows and doors traditionally were made of wood, and in the early years manufacturers offered only a few basic sizes and shapes. Depending on the craftsmanship and type of wood used, the products were simply rated “good, better, and best.” Now, life is not so simple — window and door selection is much more complex. Options in size, shape, style, and product components have proliferated.

How does an architect begin to assimilate all the information on current options for wood windows and doors? Where can an architect turn for assurance about product quality? That’s where the National Wood Window & Door Association (NWWDA) comes in. NWWDA is comprised of the country’s leading producers of wood sash, frames, window

units, flush doors, stile and rails doors, and sliding and swinging patio door units, as well as producers of the numerous other materials required to manufacture the industry’s products. As a professional trade organization, it formulates and promotes high standards of quality for the industry.

To facilitate the process of selecting wood windows and doors, NWWDA offers this compendium in association with the AIA/ARCHITECTURAL RECORD Continuing Education Series. Architects can earn two continuing education credits by reading the section, studying the learning objectives and answering the questions on page 134. More information on NWWDA, its standards, testing procedures, and information literature can be obtained from NWWDA, 1400 E. Touhy Ave., Des Plaines, Ill. 60618. (847) 299-5200. Or visit NWWDA’s website at <http://www.nwwda.org>.

Learning OBJECTIVES



AIA/ARCHITECTURAL RECORD
Continuing Education Series

After reading *Specifying Wood Windows and Doors: From Inside Out* and completing the following exercise, you will be able, from a design or specifications perspective, to:

- Distinguish at least five new trends in the composition of windows or doors.
- Determine five or more results from specific veneer cutting and matching methods.
- Discuss two examples of door manufacturing processes with safety and welfare implications for designers.
- Identify three NWWDA standards and at least six tests for specifying doors and windows.

THE Enduring QUALITIES OF WOOD

The use of wood as the prominent material for windows and doors reaches back to the first American settlers, who relied on wood construction techniques brought from Europe. While building technology has evolved significantly since then, wood has remained the dominant material for windows and doors. Why? Few materials can match its natural beauty, as revealed in its texture, grain and color. For designers, wood is a flexible tool, in that wood can be molded easily into different shapes and sizes. And, the material ranks high in thermal performance. In fact, tests show that as an insulator, wood is 400 times more efficient than steel and 1,800 times more efficient than aluminum. Additional benefits include ease of operation and resistance to air and water infiltration. Wood does not rust or corrode, and when treated with chemical preservatives is extremely resistant to decay and dimensional changes such as swelling, shrinking, and warping.

Today's responsible forestry practices make wood an exceedingly attractive building material. That's because nine times more energy is needed to produce a steel door than a wood door; aluminum doors consume five times more energy. Wood is a renewable resource, an environmentally friendly resource, supporters argue; they have turned to well-managed

forests for their products.

For many years, manufacturers have combined different materials with wood for the purpose of performance and durability. Take aluminum and vinyl clad windows. Such products now represent about 75 percent of residential wood windows sold annually. Yet, through it all, wood remains the main component and likely will continue to be.

Even so, the industry is changing and searching for new ways to stretch raw materials. For example, many manufacturers now use smaller pieces of wood that would have been discarded or burned in the past as finger-jointed components in window frame and sash areas that are hidden from view. Composite materials are used in much the same way — wood fibers are com-

Tips on Finishing Wood Products

Wood is hygroscopic—in other words, moisture in the environment can influence the dimensional integrity of wood products. Therefore, it is paramount that wood windows and doors be finished with precision. A condensed version of NWWDA's finishing tips include:

1. Before finishing, remove all handling marks, raised grain, scuffs, burnishes and other undesirable blemishes.
2. Eliminate the use of steel wool on bare wood, as well as rusty containers or other contaminants in the finishing system.
3. A thinned coat of sanding sealer may be applied prior to sanding.
4. All exposed wood surfaces must be sealed.
5. Avoid dark-colored finishes.
6. Apply an oil-based coating, as water-based coatings on unfinished wood may cause veneer splits, highlight joints and raise wood grain.
7. Be sure the finished surface is satisfactory in both smoothness and color after each coat. And allow adequate drying time between coats.

combined with various types of resin or plastic and used as components in out-of-view places.

Specifying Wood Doors and Windows. At first glance, the specification of wood windows and doors may seem daunting. Possibilities seem endless. To simplify the task, try approaching the process as a child might when taking apart a parent's watch for the first time. Pull apart the pieces, study them carefully, and then delicately put them back together. Once all the various components are examined and analyzed, each successive breakout is faster and easier. The specification of flush wood doors, stile and rail wood doors, and wood windows requires a different process, and, therefore, each are explained separately here.

SPECIFYING WOOD WINDOWS AND DOORS



Specifying

WOOD FLUSH DOORS

Because of the vast choice of wood types and veneer finishes, wood flush doors offer the designer a wide variety of aesthetic expressions. Flush doors are also widely used for special purposes, such as fire retardant and sound-retardant doors. Basically, wood flush doors have flat surfaces with several internal construction options.

Internal construction. Solid core doors have cores of wood blocks (called stave lumber), particle board, or mineral cores and are 7-ply, 5-ply, or 3-ply construction. Solid cores can be glued block, framed glued block, framed nonglued block or stile and rail. Solid particle-board cores include mat-formed wood particleboard and mat-formed particleboard of other lignocellulosic materials. Lined cores include solid wood cores of any type mentioned above with the addition of two core liners of wood, compressed corrugated fiberboard, mat-formed wood particleboard, or hardboard. Mineral core doors are specifically used for fire doors.

There are two types of interface between the core and the vertical edges in solid core doors:

- **Bonded.** Vertical and horizontal edges of solid and mineral core doors must be securely bonded to the core with adhesives and then abrasively planed before the veneer is applied to ensure minimal telegraphing of parts through the veneer.
- **Nonbonded.** The maximum gap between core and vertical and horizontal edges is 1/32 inch (0.8mm). Component size thickness tolerance is ± 0.005 inch (0.1 mm) to ensure minimal telegraphing of core parts through the veneer.

Hollow core doors have a ladder core or a mesh or cellular core that provides a uniform cell size between the door skins and supports the entire skin surface. Hollow doors are made of a 3-ply plywood laminated to each side of a stile and rail to form a 7-ply door. Hollow-core doors should not be used as entry doors for security and air and sound infiltration reasons.

Surface appearance. The aesthetics of a door's surface are determined by the species of wood it is made from and the veneer cut, veneer matching, applied molding, and laminate facing. Types of wood commonly used include ash, white birch, natural birch, maple, poplar, walnut, cherry, African and Honduras mahogany, red and white

oak, pecan and hickory. Three grades of veneer are available — AA, A, and B. In some cases, the end user's requirements may exceed the specifications of premium grade doors.

The veneer's appearance or pattern depends on how the log is cut in relation to its annual rings. Five different cutting techniques are common:

- **Rotary cut.** The log is center mounted in the lathe and turned against a razor-sharp blade. This cut follows the log's annual growth rings and produces a bold grain. Matching rotary cut veneer joints is extremely difficult since the grain is usually very wide.
- **Plain slicing.** This involves mounting a half log with the heart side flat against the guide plate of the slicer and cutting down through the center of the log. The appearance is similar to plain sawn lumber. If individual pieces of veneer are kept in the order they are sliced, this permits a natural grain progression when assembled.
- **Quarter slicing.** A quarter log is mounted on the guide so the growth rings strike the knife at approximately right angles, producing a straight grain appearance. "Flake" or "fleck" is also a characteristic produced by quarter slicing and is required in a quarter cut face veneer.
- **Half-round slicing.** The log is mounted off center in the lathe, resulting in a cut slightly across the annual growth rings, a method most often used on red and white oak.
- **Rift-cut.** Used for oak, the cut slices slightly across the medullary rays and produces a veneer distinguished by a tight, straight grain. In manufacturing doors, four methods for matching veneers are common:
- **Book matched.** A process in which every other piece of veneer is turned over, so adjacent leaves are opened as

Continued on p.126

SPECIFYING WOOD WINDOWS AND DOORS.



Wood Flush Doors Specification Checklist

Having established some of these basic definitions, specifying architectural wood flush doors becomes a rather straight-forward process. In fact, NWWDA offers the following concise checklist. Each requirement corresponds to a specific segment of the NWWDA Industry Standard I.S. 1. Some particulars are described here, while others can be found in greater detail in that document.

1. Indicate sizes and configurations.
2. Select types of hollow or solid core required.
3. Select number of plies (3, 5, or 7).
4. Select type of glue bond — Type I for exterior doors or high humidity climates; Type II for interior doors.
5. Select face material — veneer, plastic laminate, hardboard or other.
 - a. For veneer: select species, cut, grade, matching.
 - b. For plastic laminate: select color, finish, manufacturer.
 - c. If hardboard: for interior or exterior use.
6. Tolerances: Check for compliance with prerequisites, so that warp tolerances will apply, as follows:
 - a. If veneer, same on both faces.
 - b. Design of cutouts:
 - 1) Cutouts for lites and louvers: at least 5 inches from any edge.
 - 2) Area of cutouts not greater than 40 percent of face of door.
 - 3) Cutouts not to exceed half the height of the door.
 - c. 1 3/8-inch thick doors are not larger than 3x7 ft.
 - d. Doors are specified to be properly installed and to swing freely.
7. Stiles and Rails: Indicate special requirements, such as greater than standard dimensions or, for hollow core doors, limitation to wood material only (not fiberboard).
8. Finger Jointing: Specify any desired limitations.
9. Edge Banding: Specify if desired; specify matching species; specify matching within species for color.
10. Blocking: Specify size, locations of blocking other than standard lock blocks for hollow core doors.
11. Sanding: Specify more stringent standards if desired.
12. Special Construction: Note requirements for the following:
 - a. Fire protection ratings.
 - b. Acoustical ratings (STC).
 - c. X-ray resistant construction requirements (lead sheet thickness).
 - d. Other special construction.
13. Options: Note the requirements for the following:
 - a. Water repellent preservative treatment.
 - b. Standard prefitting (for width).
 - c. Extent of other prefitting.
 - d. Extent of factory cutouts.
 - e. Extent of factory hardware preparation.
 - f. Extent of factory finishing (type of finish and surfaces to be prefinished).
 - g. Special blocking (such as closers).
14. Indicate hardware locations, if nonstandard.
15. manufacturer/contractor warranty requirements.
16. Specify field operations. Environmental controls, storing, handling, finishing, installation.
17. Note requirements for maintenance instructions to owner.

WHEN IT CAME TO RENOVATING THIS HISTORIC COURTHOUSE, EVEN THE

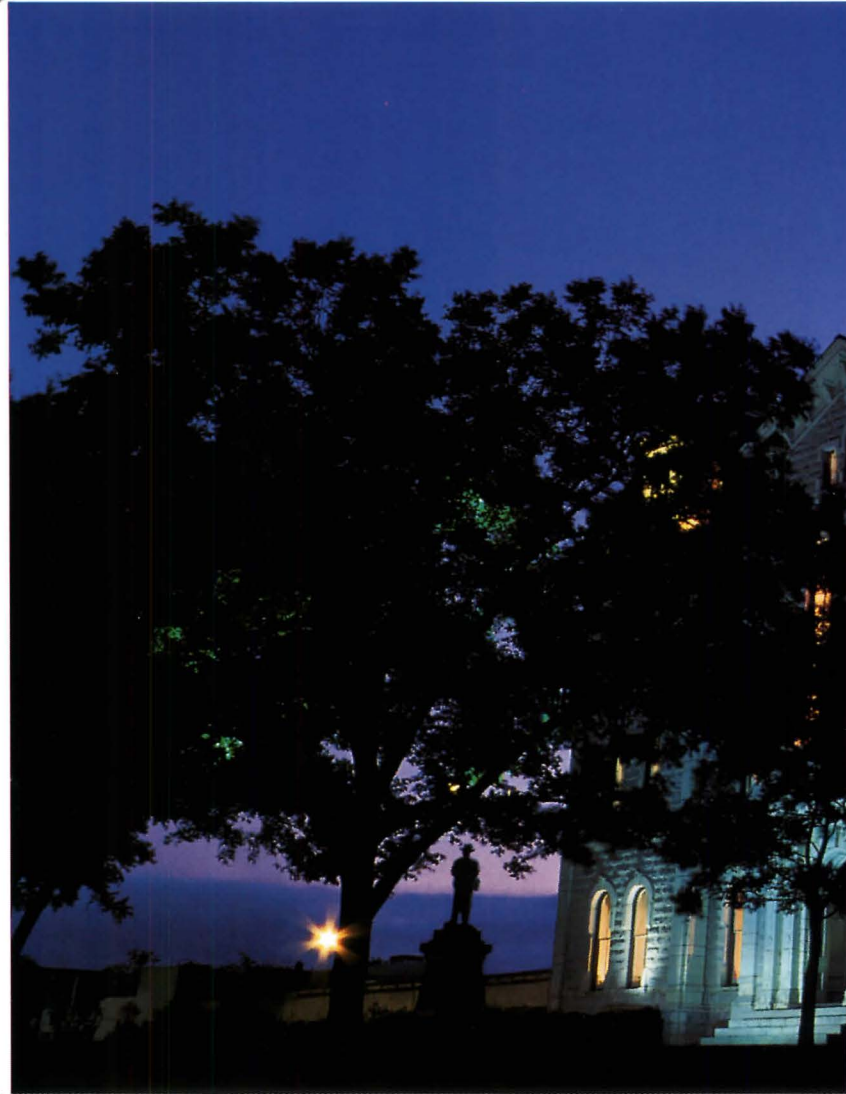
In 1964, The Parker County Courthouse in Weatherford, Texas was designated a Texas Historic Landmark. And thus began the slow, methodical process of restoring it. First to receive attention was the structure's limestone stonework. Later, the roof was replaced. Then came the windows, which proved to be one of the most challenging aspects of the project.

The Historical Survey Committee mandates that if nothing remains of a historic building's original windows, the new ones must be faithful reproductions, right down to the last detail. Since the courthouse's original wood windows had been replaced by aluminum ones some years back, that meant that all 105 of the new windows had to be virtually identical to those made and installed over a century ago.

Bids were sought, but only two manufacturers felt qualified to respond. One of them, Marvin Windows & Doors, had actually been recommended by a company that was asked to bid but declined.

Though underbid by the other finalist, Marvin's figures were based on building the largest windows with structural muntin bars to withstand the winds that buffeted the building's hilltop site. Intrigued, the architect asked each company to build a sample window. One look at the prototypes and the job was immediately awarded to Marvin.

For the next several weeks, Marvin's architectural department busied itself recreating the past. Working from turn-of-the-century photographs



COMPETITION RULED IN OUR FAVOR.



of the courthouse and measurements of the actual openings, they designed the round tops, double hungs, circles and checkrail units that play such an integral role in the building's design. As for the largest of them, not only were they built to withstand the high wind requirements, Marvin delivered them factory-mulled to further simplify installation.

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CIRCLE 36 ON INQUIRY CARD

two pages in a book. The veneer joints match and create a symmetrical pattern yielding a maximum continuum of grain. Prominent characteristics either ascend or descend across the match. Book matching is used with plain, quarter, or rift-sliced veneers. Barber pole is characteristic with book-matched faces. Because the tight and loose faces alternate in adjacent leaves, they reflect light and accept stain differently, and this may yield a noticeable color variation in some species of flitches.

- **Slip matched.** Adjoining leaves are slipped out in sequence, with all the same face sides exposed. The grain figure repeats, but joints won't show grain match. Slip matching is often used in quartered and rift-cut veneers, producing a uniform color as all faces have the same light refraction.
- **Random matched.** A random selection

of the arrangement of the leaves from one or more flitches is used and produces a board-like appearance.

- **End matched.** Leaves are book-matched end to end, as well as side to side. This match provides a continuous grain in length as well as in width.

A door's appearance can be further enhanced significantly by the addition of molding, panels, lites, and louvers; many different configurations are offered today by manufacturers. Glass options in wood doors, in fact, have grown significantly with advances in low-E glass and warm edge technology.

Special Use Doors. Special requirements exist for doors rated for fire protection, acoustical control, X-ray resistant construction, bullet resistant construction, and electrostatic shield resistance. For example, cores for 45-, 60- and 90-minute fire doors are made of a mineral substance with a chalklike consistency.



Designed to conform to sound insulating ratings, sound retardant doors have two barrier faces separated by an unfilled air space or are filled with a damping compound that prevents the faces from vibrating in unison. Such doors are furnished with special stops, gaskets, and automatic threshold devices.

Lead-lined doors have a continuous lead sheet from edge to edge in the center of the core or between the crossband and the core. The thickness of the lead should be specified so that it meets the required shielding qualities. Electrostatic shield doors have a wire mesh in the center of the core, or between the crossband and the core, and are grounded by braided wire pigtailed woven through the hinges to the frame.

Specifying WOOD STILE AND RAIL DOORS

Unlike the flat surface of wood flush doors, stile and rail doors are characterized by vertical stiles and horizontal rails as decorative elements on the door surfaces. A wide variety of standard manufactured stile and rail door configurations are available, including interior panel doors, entrance doors and sidelights, French doors, combination doors, bifold doors, louver doors, and screen doors.

Panels on wood stile and rail doors may be raised or flat and may be of solid wood, full-length edge-glued pieces, laminated parts or other wood-base construction materials that perform similarly. Molding may be raised or flush, and may be fastened with compatible nails, brads, or staples.

Recently, door panel technology has changed. Panels are now split down the middle, rotated 180 degrees and laminated together to increase resistance to warping and splitting; if a spilt does occur on one side of the panel, it shouldn't telescope to the other. Some manufacturers no longer glue door panels in place, but "float" the panels in groove in the stile and rails to permit fluctuation without affecting overall dimensions.

Exterior stile and rail doors usually consist of laminated cores with veneers. Typically, panels are also laminated but may be solid. Be sure that stiles and rails are large enough to maintain the

integrity of the corner joints. NWWDA's Industry Standard 6-91 requires exterior door stiles and rails to be at least 15 mm (4 1/2 inch) wide, with lock rails at least 190 mm (7 1/2 inch) wide for primary entrance doors and the bottom rail at least 200 mm (8 inch) wide. The American Disabilities Act requires a 400 mm (16 inch) wide bottom rail.

Nearly every element of the traditional stile-and-rail door has undergone dramatic changes in the last several years. The stiles are generally wider, which doesn't change a door's appearance, but allows a greater variety of hardware. Instead of single-piece construction, stiles now consist of short sections bonded together and covered with veneer. Connections are made by finger-jointing, which virtually doubles the gluing surface and yields an

Wood Stile and Rail Doors Specification Checklist

NWWDA offers the following concise checklist for wood stile and rail doors. Each requirement corresponds to a specific segment of the NWWDA Industry Standard I.S. 6. Some particulars are described here, while others can be found in greater detail in that document.

1. Indicate sizes and configurations.
2. Select and specify shop finishes, if any.
3. Select grade (Premium or Standard).
4. Select and specify safety glazing, screening.
5. Specify any special requirements, such as limitation of panel materials to wood only, special sticking profiles, wood species and cut.
6. Specify requirements for frames.
7. Specify that manufacturer certify that doors comply with NWWDA I.S.6, if desired.
8. Specify forced entry resistance for exterior entrance assemblies if desired.
9. Specify desired warranties.
10. Specify field operations: environmental controls, storing, handling, finishing, installation.
11. Note requirements for maintenance instructions to owner.

extremely strong bond. This decreases chances of warping and twisting.

A special note on the field finishing of wood doors. It's important to note that wood doors must be properly sanded, sealed and finished on both faces and all four edges. This will reduce moisture penetration and prevent sticking and warping. This is particularly important when doors are site fitted.

Generally, wood finishing at the factory is more desirable than on the job site. The process is usually less expensive and finishes can be applied with more consistency. A factory-finished door can arrive at the site much later in the construction schedule, after the rough trades are finished and the conditions are cleaner, drier, and more conducive to a satisfactory installation.



Continued on p.130

hout being forced to use custom windows."

Mark Reynolds,
Project Architect



Project Outline

MAKE A

STATEMENT THAT

THE DOCTORS IN
THIS NEW FACILITY
USE THE MOST ADVANCED
TECHNOLOGY TO PRACTICE
THE LATEST PROCEDURES IN THEIR
FIELD, WHILE ALSO MAKING PATIENTS FEEL AT EASE.



Design Solution

CREATE

A DISTINCTIVE
HIGH-TECH LOOK FOR THE
EXTERIOR OF THE FACILITY USING FOUR
DIFFERENT WIDTHS OF STANDARD ANDERSEN® WINDOWS TO
ACCENTUATE THE CURVED WALL IN THE LOBBY OF THE MAIN ENTRY. AT THE SAME
TIME FEATURE THE WOOD CONSTRUCTION OF ANDERSEN® WINDOWS TO HELP CREATE A WARM, RELAXING INTERIOR.

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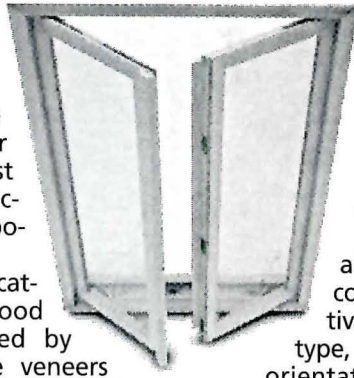
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CIRCLE 38 ON INQUIRY CARD

The development of low-E glass coatings, warm-edge spacers, and low-conductivity gas filled insulating glass units has drastically changed the window market, allowing for energy efficient windows with greater glazed surfaces. At the same time, there have been dramatic changes in window frame and sash materials, although solid sawn wood, the first material used for window frames and sash, is still the most commonly used material in the residential market. Yet, new materials are redefining the way windows are made.

For instance, many manufacturers use finger jointed stock for components of window frame and sash construction that are hidden from view. Finger joining permits the use of smaller pieces of wood that have been discarded or burned in the past and produces a structurally strong component.



A more sophisticated engineered wood product is produced by laminating multiple veneers with phenol-formaldehyde resins into large billets, which are then milled to size. The result is a structurally strong material used in door stiles and other large span or heavy load applications and hidden from view. Another type is produced by shaving aspen and poplar into strands about 200 mm (8 inch) long, laminating them together into large billets, and cutting them to required dimensions. MDI resin is used for the material, which, again, is used in applications hidden from view, in this case core frame and jamb material for clad casement and double-hung windows. In like fashion, wood-plastic composites combine wood fibers and various types of resin or plastic into composites.

Design Implications. What this list doesn't contain, and what NWWDA places great emphasis on, is "choosing a window" to meet requirements of the specific building type and site location. NWWDA's Industry Standard I.S. 2 suggests: "There is no 'perfect' window that can satisfy every situation. Too many factors such as building type and site location influence window selec-

tion. Window style and price are the easiest points of comparison. However, from consumer and builder, to specifier or architect, you should realize that the most important factors are performance related."

NWWDA's rating system (see above), therefore, takes into consideration a project's distinctive design requirements, building type, geographic location, building orientation, and building users to establish a design pressure. It then rates this design pressure as to operating forces, air infiltration, water penetration, structural strength, and force entry resistance. The purpose of the ratings is to provide minimum or maximum levels of performance windows must meet when tested according to the specified ASTM test method.

Continued on p.132

NWWDA Window Ratings

DP-Ratings	DP15	DP20	DP25	DP30	DP35	DP40
Design Pressure (psf)	15	20	25	30	35	40
Structural Test* Pressure (psf)	22.5	30	37.5	45	52.5	60
Water Penetration (psf)	2.86	3.00	3.75	4.5	5.25	6.0
Air Infiltration @1.57 psf (cfm/ft ²)	0.37	0.37	0.25	0.25	0.25	0.15
Operating Force (pounds)	25	25	30	30	30	35

*Correlates with Window Grades found in ANSI/NWWDA I.S.2-87.

Wood Windows Specification Checklist

NWWDA offers the following concise checklist for specifying windows. Each requirement corresponds to a specific aspect of the NWWDA Industry Standard I.S. 2. Some particulars are described here, while others can be found in greater detail in that document.

1. Indicate sizes, operation types, design pressure and configurations.
2. Select and specify interior and exterior finishes, coatings and claddings.
3. Select and specify glazing material. Indicate where tempered or other special glass is required.
4. If required, specify screen for each operating sash. Specify screen fabric and frame members and finish.
5. If required, specify an exterior or interior storm/energy panel for each sash. Specify glass type, and material and finish for the exterior or interior storm/energy panel frame.
6. Specify special hardware requirements, such as limit stops, electric operators, limitations on hardware materials, and operation of windows by handicapped people.
7. Specify any special requirements, such as fabrication of bay or bow window assemblies, limitations on wood species used, limitations on finger-jointing, divided light grilles, and special provisions for cleaning.
8. Select design pressure.
9. Specify a higher degree of forced entry resistance if required.
10. Specify additional testing for thermal performance and acoustics as needed.
11. Review manufacturer's warranties for glass, finish, or entire window assembly.
12. Specify field operations: environmental controls, storage, handling, finishing, and installation.
13. Note requirements for submittal of maintenance instructions to owner.

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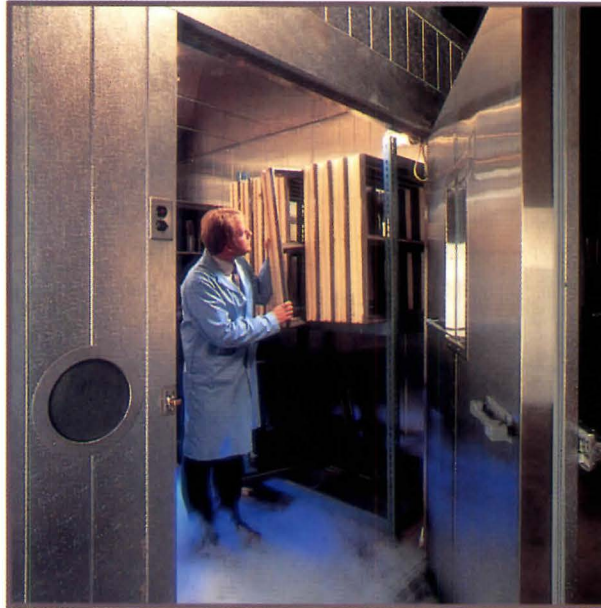
Industry standards are developed to provide a logical, simple reference system to guide specification. Compliance with the standards on the part of the manufacturer is voluntary. However, many products are now certified as meeting a specific standard. This certification comes only after rigorous testing of the products. To be certain that products have passed any of the following tests, designers should request testing in the specification.

Door Testing. NWWDA undertakes the following test procedures:

- **Fire test.** A 20-minute fire test analyses different cores and core configurations.
- **Smoke and draft control doors.** Doors are evaluated for both in/and outswing configurations, with and without gaskets. Under the test procedures, each door is cycled open/shut five times. The closing force is measured. Background leakage rates are measured at both ambient and elevated temperatures by sealing the door to the frame with aluminum foil tape. Then air leakage measurement is made at pressure differentials at both ambient and elevated temperatures. Air leakage rates are measured for each as an indication of the smoke control performance.
- **Split resistance.** To find out how much pressure the stile edges of wood doors can take before splitting. A hydraulic universal testing machine is used. A split rod is inserted into a drilled hole in the door. The door is framed so it is at right angles to the pulling pressure.
- **Cycle slam test.** The door is inspected at every 25,000 slam cycle. Hinges are tightened and lubricated if necessary. This goes on with the cycles being counted until the limit on the number of cycles specified is reached or the door becomes inoperable, the hardware fails, or the structure of the door fails.
- **Hingeloading test.** To see how much resistance wood door stiles have to the horizontal withdrawal of an attached hinge. Test simulates downward force of the knob area on the leading edge of a hinged swinging door.
- **Screwholding test.** Determines the ability of a wood door stile to resist the withdrawal of a screw driven at right angles to the stile edge. A hydraulic testing machine is used.

- **Finishes testing.** Several different tests and procedures are used to determine finish acceptability, including the adhesion of finish to a wood substrate, resistance of finish to wear, resistance of finish to temperature cycling, resistance of finish to chemical reagents, resistance of finish to color fade.

Other tests include a wear test for adhesive bonds, sound tests of sound retardant or acoustical doors and resiliency of bullet proof doors.



Entry Door Systems. NWWDA I.S. 9-88 provides performance requirements for exterior wood door entry systems. Air infiltration is limited to 5.5L (0.20 ft³) per minute per 300 mm (1 ft) of crack length when tested under a uniform static air pressure difference of 75 Pa (1.57 psf) per ASTM E283. No water penetration is permitted under the ASTM E546 test with a uniform static air pressure difference of 140 Pa (2.86 psf).

Window Testing. NWWDA has established general requirements before window components can be tested. Wood components have to be kiln-dried to a moisture content of 12 percent or less at the time the window is fabricated. All wood parts, except inside stops and trim, must be water repellent preservative treated after machining. All operable windows have to be weather-stripped. When considering glazing, the manufacturer takes into account glass, glazing procedures, insulating glass, screen panels, and double glazing panels into testing consideration. In other words, components have to meet the NWWDA standard. Window hardware and adhesives also must meet ASTM standards.

Specific window tests include:

- **Structural testing.** Static air pressure is applied to the exterior of the window unit. The pressure (in pounds per square feet) is rated 22.5; 30; 37.5; 45; 52.5; and 60. The pressure is applied and held for 10 seconds, then released. Then the same pressure is applied to the interior of the unit, held for 10 seconds and then released. To pass, there can't be any glass breakage, damage to the window hardware, or permanent deformation that would cause any malfunction or impair the operation of the window. Residual deflection of any member of the window can't exceed 0.4 percent of its span.
- **Water penetration test.** Tests how much, if any, water goes through the window during a rainstorm. The test subject mounted into wall where the window unit is closed and locked. Water applied at a rate of 8 inches of rainfall per hour. For five minutes, uniform static pressure is applied; then for one minute it is off. Sequence repeats four times. To pass the test, the window cannot leak one drop of water beyond the interior face of the window, nor can it overflow into the room or into the wall cavity.
- **Air infiltration test.** A test window is set into a wall structure in the testing chamber. A uniform static air pressure difference of 1.57 psf and/or 6.24 psf is applied, depending on the grade level being tested. Ratings go from 0.37 to 0.15 at a rate of 1.57 psf (cfm/ft²). Test results are based on the

Continued on p.134

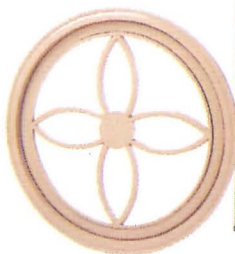
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WOOD WINDOWS
AND DOORS:**

*Drawing
Up a New
Set of Rules*



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deflection of the window unit in its mounting as the static air pressure reaches its assigned levels.

- **Forced entry test.** Lab technicians push and pry away with screwdrivers, pliers, and other devices to gain entry. Glazing is excluded from the procedure. The technicians can't break the glass or remove it.
- **Operating force of horizontal and vertical sliding window units.** Technicians inspect window handles, pulls, and other devices where pressure normally would be applied to open/close the sash. This test helps ensure that the windows will withstand the wear and tear of everyday living. The sash is unlocked, opened, closed and locked five times. Force is applied to handles, etc., parallel to and in the direction of the window openings. Allied pressure starts and keeps the sash in motion. The results are compared with a selected rating level, and the force is not to exceed

the amount specified. These ratings start with an operating force of 25 pounds and go up a scale of 30 to 35 pounds.

Water-repellent preservation treatment testing. Exposure to moisture necessitates that exterior doors and window trim be treated with preservatives. NWWDA I.S. 4-81 describes the



basic standards for water-repellent preservation treatment for exterior wood "millwork" to retard swelling, shrinking, and warping due to changes in moisture content and to reduce attack by decay and stain organisms.

For that standard, two testing methods have been refined:

- **Decay Resistance.** A new method allows testing for more than one decay fungus and requires preservative suppliers to test their formulations with other wood species, not just Ponderosa pine, which had been the only species conferred under the previous test method. Wood composites, if used in exterior applications, can now be tested according to this test method as well.
- **Swellometer test.** Water repellence of various preservative formulations are tested.

Continued on p.137



AIA/Architectural Record Continuing Education

Continuing Education

The preceding section *Specifying Wood Windows and Doors: From Inside Out*, provided by the National Wood Window and Door Association, is part of the AIA/ARCHITECTURAL RECORD Continuing Education Series. You can receive two continuing education credits by reading the section, studying the learning objectives and answering the questions below. Check your answers against those provided on the next page and return the self-report form as indicated.

QUESTIONS

1. What new materials and approaches have improved the energy efficiency, strength, and aesthetics of the window market?

Answer 1. _____

2. How do the cutting and matching techniques for veneer specifically influence door appearance?

Answer 2. _____

3. What are three processes used today for preventing warping?

Answer 3. _____

Learning Objectives

After reading *Specifying Wood Windows and Doors: From Inside Out* and completing the following exercise, you will be able, from a design or specifications perspective, to:

- Distinguish at least five new trends in the composition of windows or doors.
- Determine five or more results from specific veneer cutting and matching methods.
- Discuss one example of door manufacturing processes with safety and welfare implications for designers.
- Identify three NWWDA standards and at least six tests for specifying doors and windows.

4. The section provides three checklists for specifying doors and windows. Identify the NWWDA standard that corresponds to each list.

Answer 4. _____

5. What role does finishing play in ensuring dimensional integrity in wood products? Summarize three categories of finishing steps.

Answer 5. _____

6. List eleven NWWDA door tests and four window tests.

Answer 6. _____

For answers, turn to page 137.

For self-report form, turn to page 216.

BIG IDEAS...



In cartoons, big ideas are always represented by a light bulb floating over a character's head inside a balloon. Generally, they are household-variety A-lamps, although in recent years I've seen them in European comics drawn as self-ballasted compact-fluorescent lamps. It has been my feeling lately that if an idea is truly great, there should be a high-intensity discharge lamp floating in the balloon. Or possibly one of the new sulfur lamps, complete with the microwave-power supply.

I say this because here at ARCHITECTURAL RECORD, editors and readers seem to bombard each other with ideas the way electrically-created ultraviolet light bombards the phosphor in a fluorescent tube to create light: that is, once the electrodes get fired up, there's no stopping it until the circuit is broken. When representatives of the magazine were interviewing readers last year while preparing to redesign and reformat the magazine, readers were of the overwhelming opinion that the RECORD LIGHTING SUPPLEMENT should be incorporated into ARCHITECTURAL RECORD, rather than continuing as a stand-alone product. Among other advantages for the reader, such as not having to scour

the office for that copy of the lighting magazine that has been hoarded by the director of design in a secret ARCHITECTURAL RECORD LIGHTING cache, four times a year you can continue to rely on the magazine to provide you with articles on innovative lighting uses, noteworthy lighting projects, technical information, as well as a selection of new lighting products. As you can see here, the lighting pages will be clearly identified as a separate section. In some months, we will be able to offer AIA Continuing Education opportunities, such as the case study on office lighting on page 154, for AIA members who have a special interest in lighting. Please let us know how you like our new lighting section.

—Charles Linn, AIA

140 Lighting Observations

146 E! Entertainment

Television: Star-Quality Lighting And No Hype

Allen + Kilcoyne Architects

150 Steelcase Worklife Gets and Entirely New Kind of Lighting

Kugler Tillotson Associates

154 Prudential HealthCare: An Office Lighting Case Study

162 Sulfur Lamp Technology: Now Get It Off-the-Shelf

164 Design Team's Reflector Gives Sulfur Lamp New Promise

167 Lighting Resources

Above: Neon trees at Canal City Hakata, Fukuoka, Japan designed by Zimmerman Neon Studios, page 140.

CREATIVE USES



NEON TREES NEVER LOSE THEIR LEAVES

Zimmerman Neon Studios of Huntington Park, Calif., combined tensile structure with neon tubes and electronic controls to create these neon “trees” at Canal City Hakata, a new nine-acre tract in Fukuoka, Japan. The Jerde

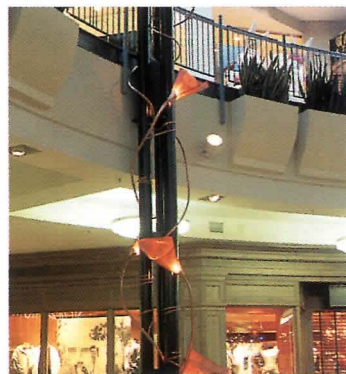
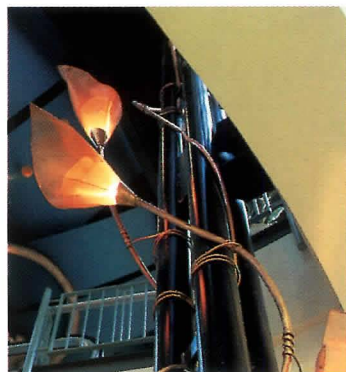
Partnership of Los Angeles is the architect on the project. The five twenty-foot-tall trees are built of hundreds of pieces of finely finished, precision-made aluminum, stainless steel, and glass parts. An open frame atop the power trunks supports a series of stems, nodes, cables, and neon struts that create a complex succession of helical forms. The lower portion, which is enclosed, contains the electrical system, including transformers and solid-state electronics, which allow the neon lamps to be programmed in an elaborate sequential display.

Zimmerman Neon Studio's neon trees at Canal City Hakata.



LILIES THAT SHINE BRIGHTLY

The Calla Lily, a very successful commercial and residential-scale lamp manufactured by New York City architect David Bergman's firm, Fire and Water Lighting, is made of folded copper mesh and tubing. The copper mesh picks up the light for a stunning glow that must've caught the eye of someone at Ehrenkrantz & Ekstut Architects. The design (with Bergman's blessing) has recently made an appearance in Jack-and-the-Beanstalk size at the firm's new Circle Centre Mall in Indianapolis. The design is comprised of 48 vine-like fixtures, mounted on eight 50-ft-tall columns. If these look a little large for your place, Bergman's smaller versions come in floor lamp, sconce, or table lamp styles.

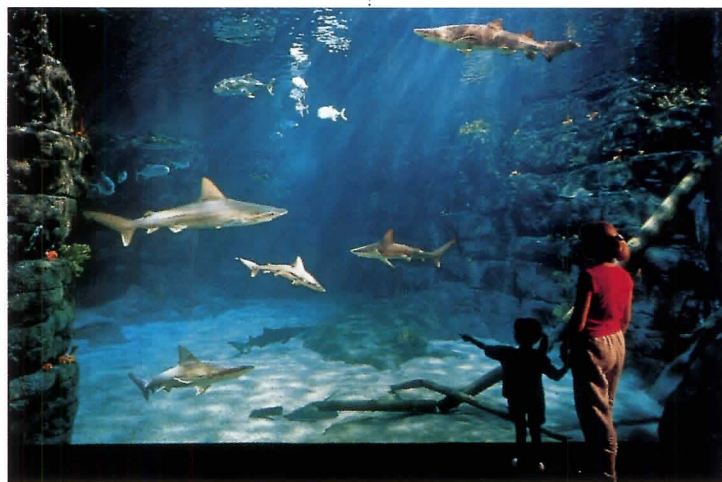


FOR FISH: A LIGHT DIET OF METAL HALIDE

A new 300,000-gallon aquarium, recently added to the Virginia Science Museum, is illuminated from above by 250W metal-halide lamps. The light produced by these special lamps gives visitors the impression they are viewing the terrain of the Norfolk Canyon, an undersea trench located off the continental shelf of Virginia, under daylight. The aquarium was designed by E. Verner Johnson, AIA,

and Associates, of Boston, Mass. Metal-halide lamps with a 5K color temperature and 75 color-rendering index are a favorite source for aquarium designers because their sun-like spectral distribution allows their sun-like spectral distribution allows animal and plant life to thrive.

Sharks and other sea-life have adapted well to the metal-halide lighting in the new aquarium at the Virginia Science Museum.





SHADOWS AND LIGHT

Seattle lighting designer Iole Alessandrini has pursued a lighting project with a goal that is the opposite of what most lighting designers attempt to accomplish. She has succeeded at balancing brightnesses outdoors, and during the daylight hours at that. Her project was an exhibition of video-art pieces produced by video artists Gary Hill and Marianna Haniger. These were displayed along the half-mile Wolf Tree Nature Trail in Discovery Park in Seattle last summer. Normally there is too much ambient light for video projections to be seen during the day. Alessandrini designed various devices consisting of a Lexan screen, which has reflection properties, and a plate made of a black matte material, which when placed to oppose the direct sunlight, casts its shadow on the screen. This



allows the video images to be visible even when the surrounding light is as bright as several thousand fc. Some of the devices were ground-mounted, and others were hung from trees. Images are projected onto these devices by video projectors set in vandal-and-waterproof containers, anchored to the ground and wired to the park's existing electrical lines.

Alessandrini's devices allowed video projections to be viewed in full daylight in a Seattle park last summer.

ILLUSIONS OF THE THEATER BROUGHT TO MUSEUM EXHIBIT

A Chinese furniture exhibit designed by architect Kyu Sung Woo, AIA, of Cambridge, Mass., and illuminated by Berg Howland Associates of Boston, was displayed this past summer at the Peabody Essex Museum, in Salem, Mass. Woo designed rooms in sizes that would be appropriate to the scale of the furniture in use, and arranged them along a "street of rooms." The idea, says lighting designer Jeff Berg, AIA, "was to create a series of abstract settings for the furniture, to get a sense of their context and scale, and to screen out the museum itself." To that end, Woo created a progression of surfaces, some of which were made of semi-transparent scrim. The lighting designers worked with the transparency of the material, sometimes lighting it from the viewing side in order to make it opaque. When the scrim was used as a ceiling, fill light was created for the exhibit by bouncing light off it from above, and accent lighting for objects was added over that. "In other cases," says Berg, "we let it be transparent; it was lit from both sides so that you could see through it and get a sense of what was coming in the rest of the exhibit. Track lighting was used throughout the exhibit, although quartz uplights were added in the vaults of the main room. MR16s were used for accent



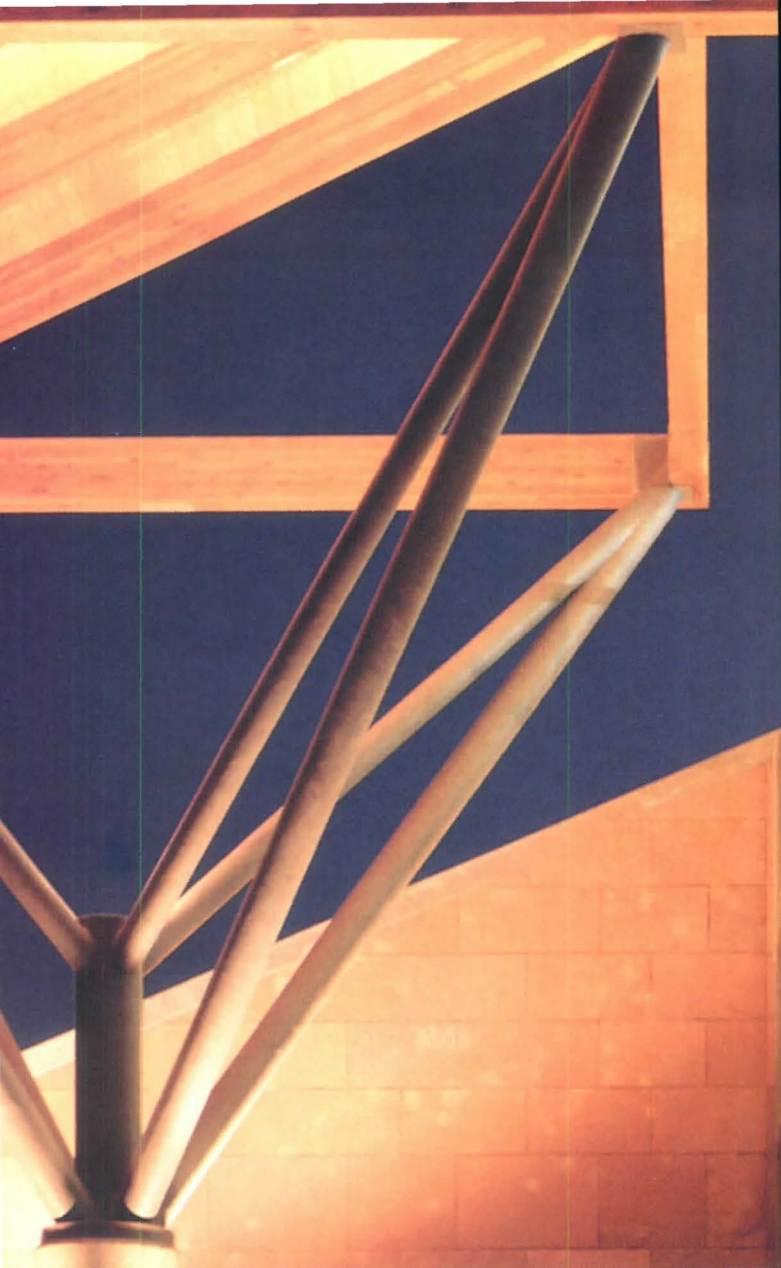
lighting, and quartz floods used for lighting the scrims.

Berg says of working with Woo, "He's very careful and has a very clear idea of what he wants to do. I think it's very interesting to have an architect do exhibit design. You get a more integrated and coherent idea, than you get from

an exhibit designer. There's more emphasis on a theme and on the overall idea."

Halogen "wedge" uplights are used to uplight the vaults in the main exhibit room (top photo, below). Light through scrims (bottom photo) give a sense of what is to come.





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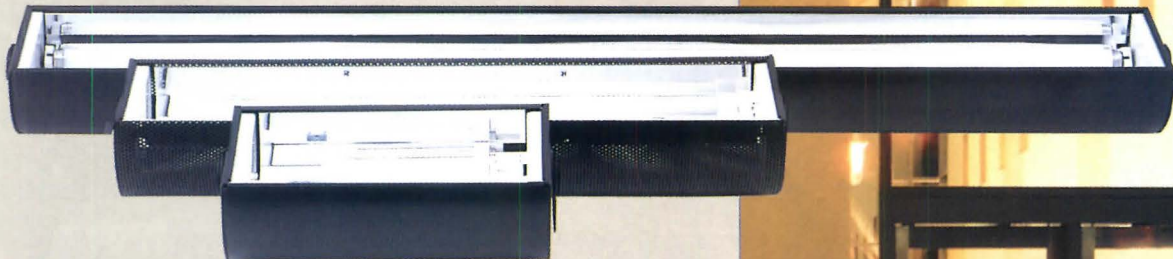
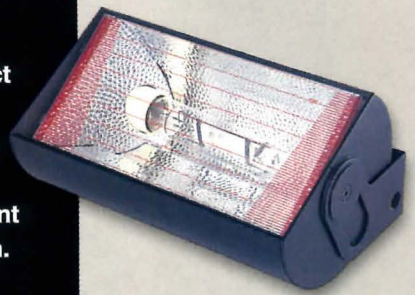
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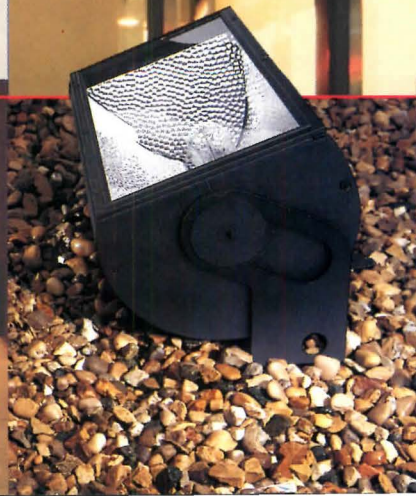
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CIRCLE 48 ON INQUIRY CARD

Ledalite 

E! Entertainment Television: Star-Quality Lighting, and No Hype

by Charles D. Linn, AIA



It is a problem that almost every architect faces on almost every project: how to come up with a lighting solution that is inexpensive, energy efficient, uses off-the-shelf components, can be completed at lightning speed, and will turn out to be somewhat glamorous. Architect Steve Kilcoyne's take on this lighting challenge creates a bit of the glitter that befits the offices of E! Entertainment Television, the network that brings the likes of Howard Stern and Joan Rivers to the airwaves. But one wouldn't necessarily know from looking that the job was done on the quick and the cheap.

Kilcoyne, a partner in the firm of Allen + Kilcoyne Architects had one bit of good luck starting out. E!'s space had extraordinarily high ceilings compared to the other floors in the 1930s office building. "This is a transfer floor, with setbacks overhead and deep beams," he says, "so when they built it, they decided to make this floor higher to get the elevations they wanted. The other floors in the building are very squat—under eight feet."

Knowing an opportunity when he saw one, Kilcoyne couldn't

let all that space go to waste. "I didn't want to do a typical dropped acoustical-tile ceiling, with troffers and downlights," he says. "That was one problem. The second problem was dealing with this long hallway one walks down to get to the office areas. We made it into a gallery."

To emphasize the height of the space, and define it through light, Kilcoyne used a metal-grid system manufactured in a quarter-round configuration, and backed by shiny metal screening, one of a number of surfaces available from the manufacturer. This is run continuously along the length of the gallery, and light from wall-mounted fluorescent uplights grazes the screen. Most of the light bounces off the exposed, white-painted concrete ceiling and back through the screen.

Kilcoyne notes, "This project was constructed in something like eight weeks, so there was no time for any fooling around with something custom." The grid solution is also a nice alternative to the track lighting often seen in hallway galleries, although its lower light levels are aided by the fact that the graphics are mounted on lightboxes, and don't need much illumination compared to regular pictures.

The lighting in the open-office space is similar to the lighting in the gallery, in that it uses indirect lighting as well as the curved metal grid and screen system. However, here the metal screen is bowed upward in a shallow arc and illuminated from below by pendant-mounted fluorescent uplights, and separate sections of the grid-mounted screen are centered in each column bay.

"In the open-office space, I didn't want to have any downlights. I wanted to have fluorescent task lights on the desks, and then illuminate the ceiling and wall surfaces," Kilcoyne says. On one side of the room, the upper wall surfaces are uplit by fluorescent strips concealed in a trough, and on the other side, wall-mounted fluorescent uplights are used. A fluorescent sconce accents each of the columns. While perforated metal is sometimes seen in these applications because it is more efficient at reflecting the indirect light, Kilcoyne liked the transparent effect of the screen material better. Perforated metal also would have created visible dark shadows behind each curved panel.

Windows in the private offices face south and are brightly daylight, so it was a natural to make the inner office partitions of translucent fiberglass insulating panels. These transmit daylight to the open-office space without compromising privacy. Fluorescent cove lighting is provided over the entry door to each office.

Project: E! Entertainment Television, New York City

Architect: Allen + Kilcoyne Architects—Steven Kilcoyne, partner-in-charge of design; Daniel Allen, partner-in-charge; Richard

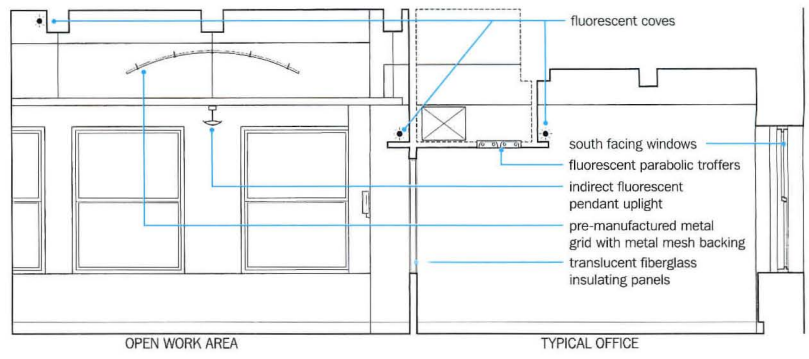
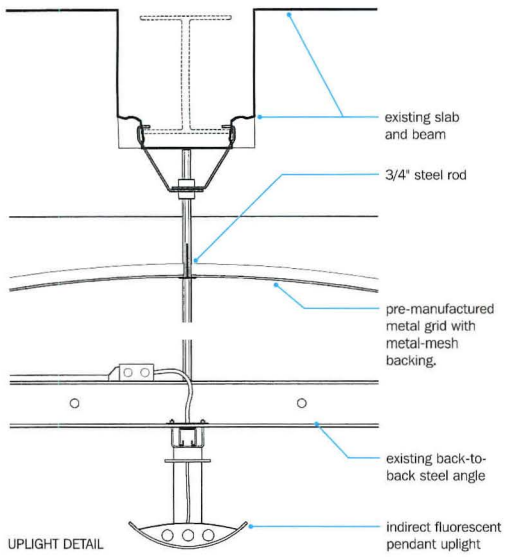
Killeen, Yetsuh Frank, Evan Molho, designers

Lighting consultant: R.L. Design—Richard Eisenberg

Electrical engineer: Ambrosino De Pinto & Schneider Engineers



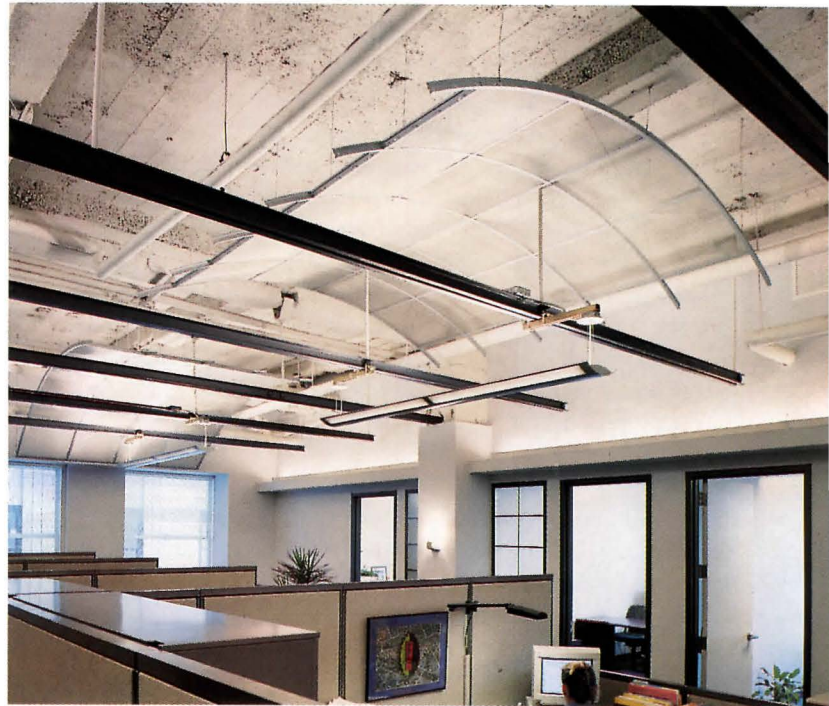
The gallery at E! is illuminated by a series of evenly-spaced, wall-mounted fluorescent uplights. Light bounces off and through curved metal screen material to give the space soft, indirect light. Light from the conference room spills through fiberglass insulating panels at left. Portraits of E! entertainers at the lower right are mounted on lightboxes.





The curved metal screen has been repeated as an arch in the open-office areas (right) and is also referred to in the conference room pen-

dants (below). Private offices (above) have fiberglass insulating panels in their interior walls, allowing the open-office areas a bit of borrowed light.



The conference room lighting is relatively simple: A fluorescent cove is concealed behind the edge of a dropped ceiling over the conference table; track is used to light art work on the walls, and recessed PAR20 wallwashers are used to graze the narrower endwalls, including a wall of fiberglass insulating panels that backs up to the gallery.

Additional PAR downlights are recessed into the dropped ceiling over the conference table, along with three pendants. The pendants are fitted with halogen lampholders, in a horizontal position, that are aimed upward so the light bounces off a curved reflector. These decorative fixtures echo the lighting concept in the open office area so well one might almost assume they were the inspiration for the rest of the job. Simple wall-mounted sliders are used for control.

"It was a low-budget job, just slightly above 'work letter,'" he says, invoking the New Yorker's term for the amount of money a landlord agrees to pay to finish out a tenant's space. "We had to be really careful with what we did. We started in January of this year, handed in the drawings two months later and the clients were in in eight weeks." ■

Manufacturers' Sources

Pendant- and wall-mounted indirect uplights: *Neo-Ray Lighting*
Recessed fluorescent downlights: *Lightolier Inc.*
Concealed fluorescent striplights with fluorescent reflectors: *Mercury*
Decorative downlights and fluorescent wall sconces: *Shaper Lighting*

Recessed Track: *Lightolier, Inc.*
Conference room pendants: *Winona Lighting*
Conference room controls: *Lutron Electronics Corp.*
Curved grid with metal screen: *USG Interiors*
Curvatura Fiberglass insulating panels: *Kalwall Corp.*

Steelcase Worklife Gets an Entirely New Kind of Lighting.

by Charles D. Linn, AIA

Change is the constant at Steelcase Worklife, the furniture and office systems manufacturer's New York City customer resource center and sales offices. "When Steelcase came to us they were looking for some conceptual ideas," says lighting designer Jerry Kugler. "And the one thing of which they were sure about the spaces was that they would always change. We had to design something that would work on any of the floors that they had." Kugler thought of the building as "a kind of sandwich. We knew the bread. We knew that the lobby would be different, and we knew that the top would be different. And we knew that all of the stuff in the middle would have to be very flexible."

Conceptualizing a lighting system

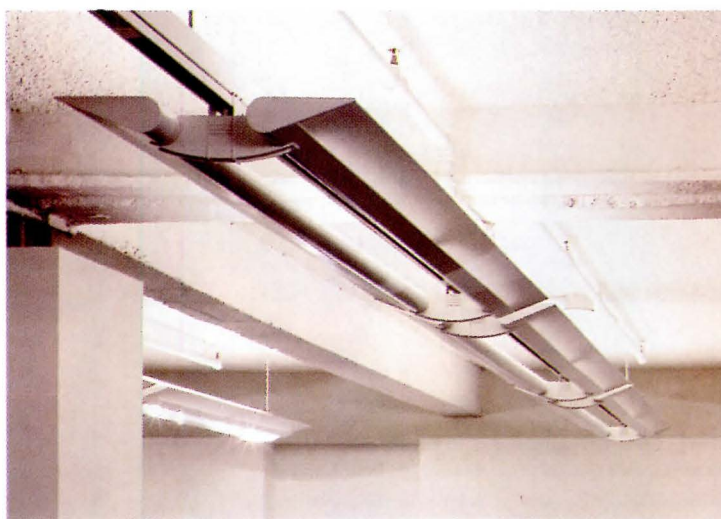
Kugler and his associate, Charles Starner, began conceptualizing about not only how to accommodate a number of lighting functions but also how to devise a system that would help spatially organize a building that had been built at two different times. Varying column grids and ceiling heights were among the conditions they encountered. "The question was," says Kugler, "could we, that is the architects and the lighting designers, collectively try for one grid that would pass through all this? And, we worked toward a module that would repeat."

What Kugler and Starner developed was a grid of points that were superimposed over the building's irregular column plan. From the ceiling, these points were used to support a series of parallel continuous extrusions that carry power, and are also capable of carrying some loads. "Our original idea was that this extrusion would run through continuously in rows, and it would be used to unify the space, be an organizer of the space, because so much was going on below it," says Starner.

"You can erect offices around this 'grid,'" says Kugler. "You can erect furniture conditions, you can build wall conditions, and it can be stacked through the whole building. The architects loved it. They said 'This is just what we're looking for. The grid is simple enough, and repetitive enough that it will really help us get to where we want to be.' In the end what they're doing is selling furniture, and they need to be able to make the space very kinetic and transient."

Refining the system, and letting go

At this point Kugler and Starner began developing pieces that could be attached to the extrusion. "They [Steelcase] said, 'we want there to be theater spotlights to highlight our product; we want to be able to do indirect lighting because many offices use a lot of computers, and we want to be able to create a sense of place in the space.'" The designers took these ideas one step further, and explored having the extrusion manufactured in such a way that fabric could be stretched between some of the rows of extrusions to create temporary ceiling planes, some of



which could be indirectly lit from behind and would glow.

"And," Kugler laments, "we put this whole package together. We got as far as finding generic optics for it, standard track, and made it so any manufacturer could bid it, and got a price for it, and it was way too expensive. It was three times more expensive than anyone wanted to pay. So then the consensus was, let's just not think about it." But somehow the idea wasn't dead. "It took a year to come back around, and there were an awful lot of players. We worked more in an advisory capacity in the end. As it turned out, the extruded track took a different shape; the wing-shaped plates on the ends were designed by the architect; another piece as it evolved came from other fixtures that had been designed by other manufacturers that we had been involved with; the client was involved as well; and now they all came out of one hand—they were melded together and came out of Peerless Lighting. For better or worse, it's a complicated process, but lighting-wise it achieves exactly what was intended originally."

The resulting lighting system is based on a 20-ft module. Between the end-points of the module, a single piece of extruded, line-voltage track is suspended and fed electrically from one end. When indirect fluorescent uplighting is installed, access to the track is not blocked, making it possible to create an indirect lighting environment for office

Project: Steelcase Worklife, New York City

Owner: Steelcase, Inc.

Architect: Kohn Pedersen Fox Interior Architects—J. Woodson Rainey, Jr., AIA, design principal

Lighting Designer: Kugler Tillotson

Associates—Jerry Kugler, president; Charles Starner, associate

Electrical engineers: Cosentini Associates

Construction manager: Tishman Interiors



The human body
is not designed for
long term sitting.

EXIT



The various possibilities provided by this new lighting system can be seen on the previous pages, where there are close-ups of the indirect fluorescent uplighting system and the low-voltage exposed-conductor system. Track can be

used alone to highlight furniture on display (opposite) or with the low-voltage exposed conductor system below. Many fixtures are compatible with the exposed-conductor system, allowing the look of the showroom to change regularly.





systems below, while still allowing track fixtures to be used to spotlight products. The indirect uplights can be removed simply by loosening set-screws that secure them to the track, and track fixtures are removed with a twist. This lighting system offers an enormous range of possibilities for those doing product display, as well as offering comfortable lighting for those who are actually working at desks and computers in the space. "A showroom calls out for total flexibility," comments Starner. "It has to, because they're rearranging things there every day."

Some sections of the extruded track have no indirect lighting installed, but wing-shaped end-caps with bare-conductor wires stretched between them. These accommodate low-voltage decorative fixtures that simply clip the bare wires. "What's nice about this is that there are 50 or 60 products on the market that will fit on these wires. Next year they could choose something totally different," says Kugler. For now, the client chose hollow blown-glass spheres with low-voltage lamps for this application. As a visual pun on this spherical theme, in the lounge Kugler and Starner used low-voltage lamps suspended on long stems that have been covered by stainless-steel tea balls, bought by the case in Chinatown.

The most significant addition to the lobby was the installation of a "box" of stainless-steel mesh, and a large ant colony. The light box is intended, according to Kugler, "to be a carpet of light to draw you in. This isn't the first time we've worked with this architect, to try to get moire patterns in wire mesh to work. We were trying to do a folded plate scenario, but we didn't like it when we got it there. So, basically, what you have is this hollow banded box of stainless-steel mesh, open on the top.



In the lobby, a wire-mesh box was installed over rows of downlights, to create what lighting designer Jerry Kugler calls "a carpet of light" to draw customers in.

All we have to make this happen is a series of recessed downlights, so that the light is both reflecting around the box and through it." As well as bringing some life to the lobby, it effectively ties this entry space to the sparkle of the upper floors. ■

Manufacturers' Sources

Custom fluorescent uplighting and support rail system: *Peerless Lighting Corp.*

Low-voltage cable lighting: *Tech Lighting; Translite*

Undercabinet tasklighting: *Peerless*

Track and heads: *Halo Lighting*

Low and line voltage downlights;

baffled compact fluorescent

downlights: *Edison Price*

Lensed fluorescent downlights:

Lightolier

Linear fluorescent wall slots: *Peerless*

Lighting; Edison Price; Neo-Ray

Fluorescent troffers: *Zumtobel*

Custom tea-ball fixtures: *Rambusch*

Lighting

Prudential Healthcare: An Office Lighting Case Study

by Paula Rodgers and Naomi Miller

The Lighting Research Center at Rensselaer Polytechnic Institute, Troy, N.Y., has conducted a series of lighting case studies called Demonstration and Evaluation of Lighting Technologies and Applications (DELTA). record lighting is pleased to present part of one of the center's recent studies, a new office building for Prudential HealthCare, in Albany, N.Y. The complete report includes plans, specifications and all user-response data.

Employees in this 84,000-sq-ft building process medical and dental claims for their New York state clients. The Building includes open-office space with partitioned workstations, conference rooms, a central mailroom, and an employee cafeteria. Gary Steffy Lighting design was hired to devise a cost-effective lighting scheme that optimizes energy savings, while providing balanced brightnesses. Brightnesses are balanced in the office environment to reduce the brightness of images on a VDT screen and to improve the workers' visual comfort.

Employees typically process mail, do data entry, and answer customer telephone calls. Linear fluorescent uplighting in open offices provides low-level ambient light for reading, yet minimizes glare on employee's VDTs. Individual fluorescent task lights boost desktop light levels for more difficult reading tasks. The lighted environment complies with the standards for office lighting set by the Illuminating Engineering Society of North America, known as RP-1.

Project specifications

The building's principal light sources are F32T8 4-ft rapid-start lamps, with a CRI of 75 and a correlated color temperature (CCT) of 3000K. These lamps are used in suspended uplights, concealed wall slots, and recessed troffers. Task lights use F25T8 or F32T8 lamps with a CCT of 3500K. Most recessed downlights and wallwashers use compact-fluorescent lamps, either FT18W 3000K, 85CRI or CFT13W 2700K, 82 CRI. A small number of incandescent downlights used 50W PAR20 halogen lamps.

Continuing Education This article examines a lighting case study provided by the Lighting Research Center at Rensselaer Polytechnic Institute, Troy, N.Y. Use the following learning objectives to focus your study. After reading this article, look for the questions and self-report form in the March issue of ARCHITECTURAL RECORD. After completing the questions and checking the answers, AIA members can send in the self-report form for two AIA Learning Units.—Mark Scher, AIA Director, Professional Development Products and Services.

Learning Objectives After reading this story and completing the exercises, you will be able to:

1. Describe a specific approach to lighting typical office workstations;
2. Identify solutions for lamp imaging and luminaire VDT-reflection problems;
3. Summarize savings due to the effectiveness of the lighting design.

All the T8 lamps and most compact-fluorescent lamps are operated by electronic ballasts. Task-light ballasts are electronic, designed for reduced light output with a ballast factor of 0.77.

Details

Typical open offices. Lighting in open office spaces is provided primarily by rows of pendant-mounted uplights, in oval, 3 in.- by 8 in.-extruded aluminum housings in continuous rows. These are suspended from the 8-ft, 9-in.-high ceiling with aircraft cable. The scheme provides an average workplane illumination of 28fc. Task lights, which are mounted under the furniture systems' overhead cabinets, are furnished with a lensed optical system designed to provide uniform illumination across the work surface, and minimize lamp imaging. These utilize one F25T8 lamp, whose light output is reduced through the use of a special ballast. The task lights boost the workplane illuminance to an average of 36 fc. The widespread distribution of the fixtures allows the indirect fixtures to be spaced 8ft on-center, while still giving a 4-to-1 uniformity ratio, which meets the RP-1 standard. The round profile of the fixtures allows shadows on the bottom of the fixtures to vary gradually, preventing sharp-edge luminaire reflections in the VDT screens. A time clock on each of the three floors switches them on for the early morning shift, and off after the late shift and cleaning are complete.

Typical Workstations. The layout and lighting of workstations in the open-plan areas on the second and third floors of the building are essentially the same as those on the garden level, except that the furniture

Project: Prudential HealthCare
Albany, New York

Architect: The Clover Group

Lighting Designer: Gary Steffy
Lighting Design—Gary Steffy,
president; Gary Woodall, senior
designer and project manager

Site sponsor: New York State Energy
Research and Development Authority

Evaluation: Lighting Research
Center DELTA Team—Naomi Miller,
program director; Russell Leslie,
Mark Rea, reviewers; Paula Rodgers,
project coordinator; Peter Boyce,
evaluation team leader; Judith Block,
publication manager; Claudia Hunter,
editor; Naomi Miller, Linda Sanford,
Maarten Mulder, Rita Koltai,
evaluation team; James Underwood,

Abhay Wadwa, André Yew, technical
assistance

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Northeast Utilities System; Rochester
Gas and Electric Corporation; Lighting
Research Center

DELTA has evaluated a number
of lighting environments including
retail, office, and light-manufacturing
facilities. For more information about
DELTA publications and ordering
information, contact the Lighting
Research Center, Rensselaer Polytechnic
Institute, Troy, New York 12180-3590.
Phone 518/276-8716, fax 518/276-2999,
or e-mail lrc@rpi.edu.



Typical workstations (left) have light to medium finishes and are illuminated by rows of pendant-mounted fluorescent uplights, as well as fluorescent task lights that are mounted below binder bins. The Cornerstone Room (below) is a multipurpose conference room for meetings and

audio-visual presentations to clients. Here the lighting is a combination of T8 uplights, wall slots, and recessed PAR20 incandescent floodlamps. The downlights are used alone during video presentations when other room lighting would interfere with note-taking.



finishes on the upper two floors vary between 30 and 50 percent reflectance, rather than a darker range of between 10 and 30 percent on the garden floor. It is worth noting that workers perceive that there is less light in the workstations with the darker finishes.

Task lights are mounted on the undersides of the binder bins. These have a contoured prismatic lens that projects light toward the rear panel of the workstation, as well as down toward the task area. This optical system spreads the lamp image evenly across the lens area, reducing brightness and eliminating any veiling reflections. The balanced luminances between the task and the immediate surroundings meet the RP-1 recommended ratio of 3 to 1. All employees have a VDT in the corner of their workstations, and may have a view to the outdoors through perimeter windows. VDT users immediately next to windows may experience glare on their screens.

Managers' Conference Rooms. All managers have conference rooms adjacent to their workstations. Three walls are light gray in color, with 50-percent reflectance, and the fourth has partially-frosted glass panels. Two 8-ft-long uplights provide an average of 55 fc on the conference table, and contribute useful vertical illumination for wall-mounted marker-boards. The uplights are controlled by a wall-switch occupancy

THE EMPLOYEES DELTA INTERVIEWED WERE GENERALLY VERY SATISFIED WITH THE OPEN-OFFICE LIGHTING.

sensor just beyond the door swing inside the room. The DELTA evaluation team found that these lights were in use only 30 percent of the time, which supports Prudential's policy of using occupancy sensors in conference rooms and similar spaces to save energy.

The Cornerstone Room. This is a large, rectangular multipurpose conference room for meetings and audio-visual presentations to clients. The lighting is a combination of T8 uplights and recessed PAR20 incandescent downlights. These are controlled by separate four-way switches, or dimmers. The uplights are configured in a U-shape and provide an average of 21 footcandles on the conference room table. At full output, the dimmable downlights provide an average of six fc. These are used for note-taking during

Where finishes were darker, some employees felt that light levels were insufficient.



video presentations when too much light would interfere with screen visibility. Wall slots at the end of each room smoothly wash the walls with a vertical illuminance ratio of 6-to-1. One of the two longer walls has windows fitted with blackout blinds, and the opposite wall has full-height glass panels. The afternoon sun can add as much as 150 fc to the conference table. While the appearance of sunlight in the room is pleasing, the strong patterns of light are uncomfortable, so the blinds are generally pulled down when the room is in use.

Mailroom. Every week mailroom workers handle up to 75,000 pieces of mail. Before the workers moved in, furniture was rearranged to streamline operations. Overhead bins 6-ft 5-in. tall replaced shorter units, but the layout of the indirect lighting system was not modified to reflect this change, thus the resulting lighting levels are lower than anticipated.

Project evaluation

Energy impact. Using input watts from manufacturers' literature, the DELTA team calculated the lighting power density (LPD) for the entire office building. For conditioned space, the maximum LPD is 0.99W per sq ft. During core business hours (9:00 a.m. to 3:00 p.m.) the in-use power density is 0.85 W/sq ft. Most of this difference reflects DELTA's observation that only about half the task lights were on during core hours. The New York State Conservation Construction Code would have allowed 2.40 W/sq ft for a similar building.

Controls. Because the building has limited daylight penetration, the owner and lighting designer agreed that a sophisticated control system that would operate lighting based on interior daylight levels would not save enough energy to be a sound investment. Instead a more economical system of time clocks, described above, was installed.

Occupancy Sensors. Occupancy sensors were used to control lighting in three types of spaces: mechanical and electrical spaces, vending and copy areas, and managers' conference rooms. The sensors are of the passive-infrared variety (PIR) which detect the movement of heat sources, such as people, in these areas, and turn lights on when they sense movement. If they don't detect motion after a preset period of time—7 seconds to 15 minutes—they turn the lights off. The sensors have lenses with a detection area of 180 degrees from side to side. At most locations they have been mounted inside the room, adjacent to the door opening, and usually activate the lights as soon as someone walks into the room. In managers' conference rooms, the sensors are mounted inside the room just beyond the door swing. Because these doors are generally left open, occasionally lights will be activated when someone walks by the door outside the room. Lights also may go off if a person sits still for a long period of time.

Control of Daylight. Windows are tinted to limit transmission of radiant energy (heat and light) to only 10 percent to provide employees with views while limiting heat gain. Unfortunately, direct sunlight washes out some VDT screens during the early morning or late in the day due to low sun angles. The VDTs' locations are fixed in the workstations, so employees can't move them out of the sun. The owner plans to reduce this glare by installing horizontal blinds on all of the perimeter windows.

Environmental and economic analysis

The DELTA evaluation team observed the energy usage on a typical day and night compared to a hypothetical model, ASHRAE/IES Standard 90.1,



Managers' conference rooms (typical above) and the mail room (right) are illuminated using indirect uplight-

ing only. As the mail-room was reorganized after the lighting was designed, some refinements may be needed.



which has an allowable lighting power density of 1.57W/sq ft to arrive at the following conclusions: At the building's current electrical rate of 11 cents/kWh, the calculated annual dollar savings is \$41,456; \$33,008 from lighting, and \$8,448 from reduced hvac load.

The cost of the lighting for the entire building, including luminaires, lamps, branch circuiting, and installation was \$672,000, or about \$8 per sq ft. This cost is consistent with other installations of indirect lighting with electronic ballasts for VDT spaces.

According to estimates from the United States Environmental Protection Agency, reduced energy consumption from this building, compared to the ASHRAE/IES 90.1 LPD of 1.57W/sq ft will result, annually, in lowering CO₂ power-plant emissions by 292 tons, lowering SO₂ by 5,069 pounds, and lowering NO_x compounds by 2,184 pounds. These materials contribute to global warming, acid rain, and smog.

Staff Response: The DELTA team surveyed 282 respondents about their impressions of the lighting, and what, if anything could be improved. Specifically, DELTA asked about visual comfort, task visibility, window glare, reactions to appearance, maintenance, and comparisons to previous offices. Generally, employees were very satisfied with the appearance of the lighting in the open offices and mailroom, and considered it comfortable. Many had never worked under indirect lighting before and seemed to be satisfied with the appearance of the indirect lighting compared to the direct lighting in their previous offices. Over 40 percent believe that the lighting is better than in similar work spaces in other buildings. However, 13 to 15 percent of the open-office employees and 27 percent of the mailroom employees said their workplaces are too dim. Few employees reported that light from electric sources was reflecting in their VDT screens. However, several employees reported problems with direct sunlight hitting their screens in late afternoon.

Lessons learned

"Luminance balancing" works. Workers had very few complaints about

glare or VDT reflections. The indirect-lighting system and the tasklighting were designed in conjunction with the interior finishes of the building to produce luminance ratios that meet IES RP-1 recommendations. The benefits of this design approach are evident in the survey responses, where 80 percent of the employees said the lighting is comfortable.

Low-light transmission windows do not reduce direct sunlight enough to eliminate glare on VDT screens. The tinted-glass windows are cost effective in reducing hvac loads, but horizontal blinds are needed so employees have the option of blocking the sun.

Some people prefer higher light levels for office spaces. Some of the workers said they would like more light, even though they said they could see well enough to do their work. Additional task lighting boosts light levels for reading tasks, but some employees still feel the level is insufficient, or too localized. Increasing ambient light levels would help eliminate this complaint. However, significant increases in the lighting power density could also reduce VDT visibility, and increase both initial cost and the annual operating cost of the lighting system.

Passersby can trigger occupancy sensors inside a room. Occasionally, the lights come on when someone walks past an empty conference room. The manufacturer of the PIR occupancy sensor suggests applying a small piece of opaque tape to cover the corridor-side portion of the sensor's lens to reduce its coverage. ■

Manufacturers' Sources

Pendant-mounted indirect uplights, wall-mounted fluorescent uplights; undercabinet task lights: Peerless Lighting Corporation
Recessed fluorescent downlights, recessed fluorescent parabolics; fluorescent wall-

washers: Lithonia Lighting

Decorative sconces: Shaper Lighting; Flos

Recessed downlights with decorative glass-disk accents: Staff Lighting

Occupancy sensors: Leviton

Time clock: Tork

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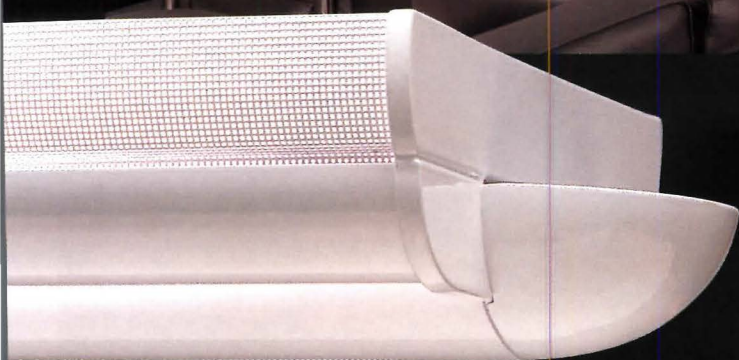
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CIRCLE 52 ON INQUIRY CARD

Sulfur Lighting Technology: Now Get It Off-the-Shelf

by Lindsay Audin



ble Solar 1000 that would dim in the range of 20-to-100 percent output for 230V systems. Fusion Lighting has reportedly been developing its own dimming system.

Several innovative fixture styles are also in the works, including a cruciform light guide with a single Solar system at its intersection that would distribute light out each of the four rectangular light-guide legs.

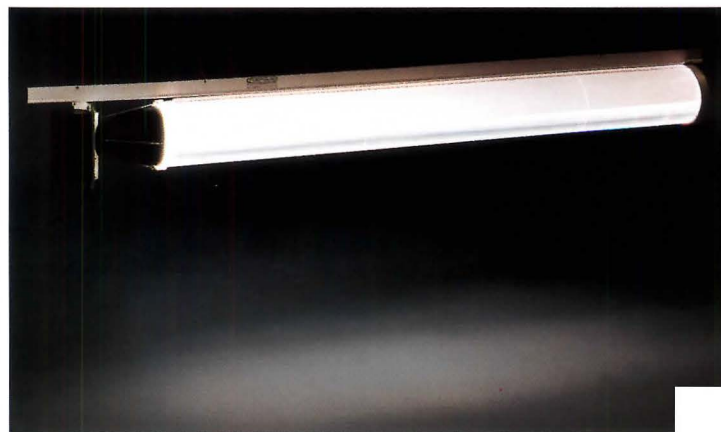
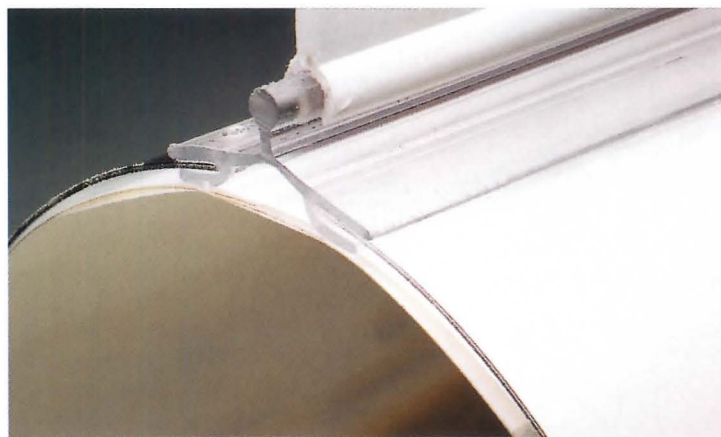
Most applications of this equipment are in large open areas, such as atria, garages, and assembly and distribution centers. Early installations in this country have included the National Air and Space Museum, a Pontiac, Mich., auto plant, and several package-handling facilities. Overseas, sulfur lighting systems have also been installed in office complexes and shopping malls. While still relatively expensive compared to conventional alternatives, this new technology is rapidly carving out a niche for itself, and it's sure to continue to evolve. ■

The sulfur lighting unit (left, with and without reflector) attaches to a light guide (detail and assembled unit below).

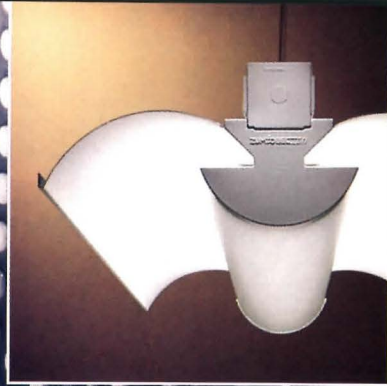
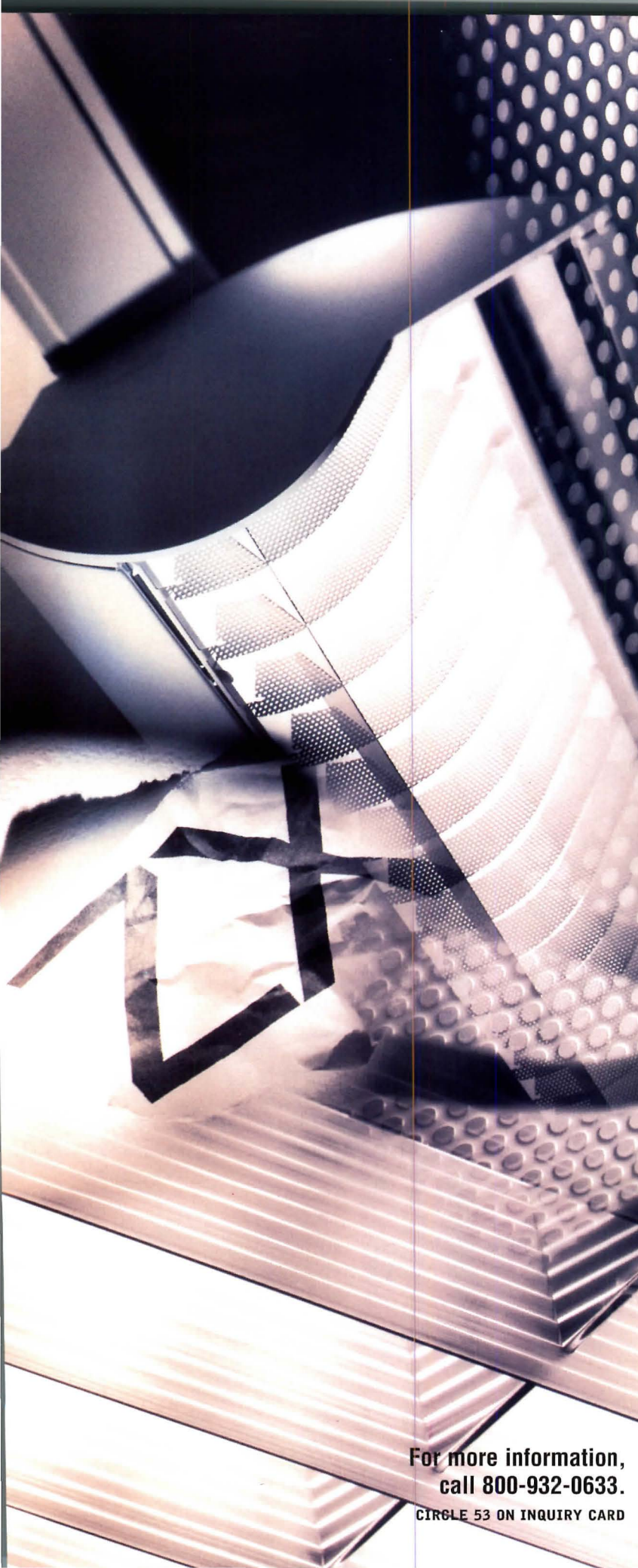
The next step in the evolution of light sources has been taken: Lighting designers can now avail themselves of standard, UL-approved lighting equipment using sulfur lamp technology. Fusion Lighting, Baltimore, Md., is now offering OEMs its Solar 1000 product, a 1.3kW unit capable of producing 130,000 lumens, either with a reflector or a lightpipe. Many improvements have been made to this product since it was brought to the attention of RECORD readers [RECORD LIGHTING, February 1995, page 12], and other vendors are now supplying ancillary equipment, such as cylindrical light guides and dimming systems.

Unlike fluorescent lamps that stimulate mercury to generate ultraviolet light and then convert it to visible light using phosphors, this system bombards sulfur-gas molecules with microwaves, causing them to emit visible light directly: no electrodes, no mercury, no phosphors. The net result is high efficiency (about 100 lumens/W) and a 79 CRI at 6,000K color temperature. Very little ultraviolet or infrared is emitted, making this source a possible winner in many applications. Fusion Lighting's Solar 1000 consists of a lamp (a hollow, sulfur gas-filled glass sphere on a stem), power supply (with .93 power factor), magnetron (to make the microwaves), and a motor assembly (to spin the lamp, thus maintaining constant light output).

The biggest problem seems to be distributing this abundance of light. Early applications of this source have utilized light pipes to channel and distribute its light output. Cylinear Lighting Co., of Toledo, Ohio, provides the Solar 1000 with a hollow light guide (see figure) using prismatic and clear films to reflect and direct the light out of one side of the tube. Fiberart of St. Petersburg, Fla., is working on a side-emitting fiber optic product, designed to replace neon signs. While not yet available in this country, CelsiusTech of Sweden is offering a dimma-

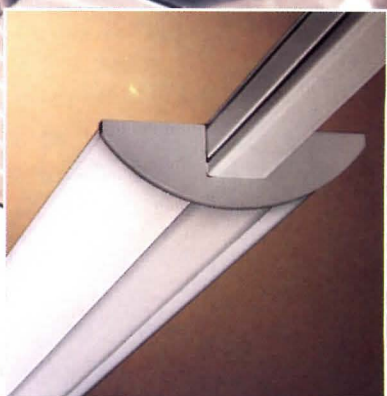
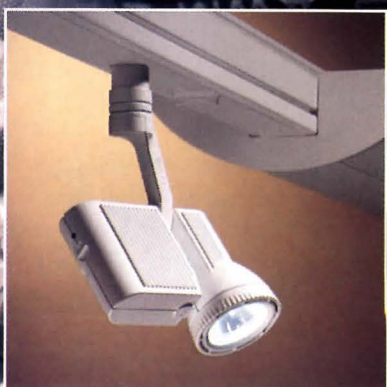


Lindsay Audin is the president of EnergyWiz, Inc. and lighting research consultant to E-Source, a Colorado-based energy consulting firm. He can be reached via e-mail at energywiz@aol.com.




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CIRCLE 53 ON INQUIRY CARD

ZUMTOBEL 

Design Team's Reflector Gives Sulfur Lamp New Promise

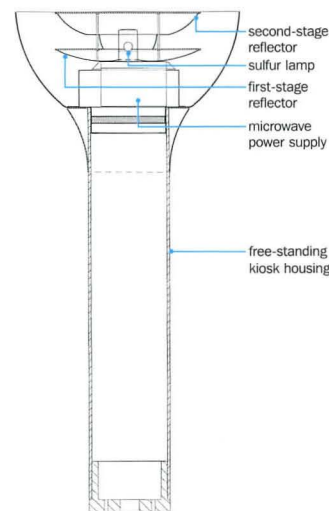
by B.J. Novitski

The challenge: to distribute the light from a brilliant point source uniformly throughout a large space. Is this a problem statement for a daylighting designer? Perhaps. But also for the multidisciplinary team that recently unveiled a breakthrough technology in Sacramento, Calif. The installation was the result of a collective effort of private lighting companies, a federally funded laboratory, and a large utility long known for its activism for energy efficiency and conservation. The fixtures are a pair of kiosks, each containing a single 1000-watt sulfur lamp. Together they uplight the lobby of the headquarters of the Sacramento Municipal Utility District (SMUD), a space previously illuminated by 46,000 watts. Designers of this prototype say that the fixtures will be suitable for a broad range of office, commercial, and industrial applications.

Sulfur lamps have been used for several years in outdoor and heavy industrial settings, where the light is often distributed via light guides, or light pipes. These are long tubes with reflective interiors that emit light along their length. Unfortunately, their efficiency is low, and the resulting glare makes them unsuitable for more confined interiors, such as in offices and commercial spaces, which consume a large proportion of lighting energy in the U.S. It has been estimated that about half of the \$30 billion spent annually on indoor lighting could be saved through energy-efficient alternatives.

Solving the distribution problem was a collaborative effort between Cooper Lighting, makers of Halo, Metalux, McGraw-Edison, and other brands, and the Lighting Research Group of the Energy and Environment Division at Lawrence Berkeley Laboratories (LBL). They developed a two-stage reflector consisting of a shallow pan below a bowl that surrounds the lamp. Modifying the geometry of the reflectors changes the light-distribution pattern, enabling the fixture to accommodate a variety of ceiling heights (as low as 9 ft) and desired lighting levels.

The Sacramento prototypes are housed in free-standing kiosks which are tall enough to prevent direct views of the lamp or reflectors



from eye-level. The assembly uplights a low-glare but reflective ceiling, specially designed by Armstrong for this purpose. Michael Siminovitch, principal investigator at LBL says, "By varying the distribution geometry and the relative spacing of the kiosks, a large range of light levels can be easily delivered." One kiosk can replace as many as 30 conventional ceiling fixtures in an open-office space, he adds. The fixture can also be mounted on a wall or suspended from the ceiling, adding to its flexibility in interior applications. Its efficiency rating of 85 to 88 percent is as much as 25-percent better than ratings for light guides and is one of the highest ratings ever scored for any white light source/fixture system.

An important footnote to this technical achievement is the unique collaboration which was essential to its success. Even the best science does not guarantee manufacturability or commercial feasibility. "Working closely with Cooper Lighting was critical to this research," Siminovitch notes. The company, which has long prided itself on its commitment to efficiency and quality, now lauds the cooperative spirit embodied in this government/private-sector partnership. Cooper Lighting president Fritz Zeck noted at the introduction, "What you see today is more than just a demonstration of new lighting; it's proof that cooperation will pave the way for new products and new markets. Not only companies, but governmental organizations can improve upon what we know, what we have, and how we live more effectively by working harmoniously together toward a goal."

This is surely just the beginning. Just as creative designers never stop developing ways to distribute sunlight throughout interior spaces, architects and lighting designers are going to see this breakthrough prototype as raw material from which to craft efficient, productive, and enjoyable lighting environments. ■



This two-stage reflector, developed by the Lighting Research Group at Lawrence Berkeley Laboratories and Cooper Lighting, is the heart of the new lighting kiosk.

B.J. Novitski is a writer specializing in architectural technology, education, and computers. She lives in Eugene, Oregon.

NEW PRODUCTS

▼ Direct/indirect pendant

Suitable for open-plan offices and conference rooms with ceiling heights of at least 9 ft 3 in., Neo-Ray's Nuage places four 50W T5s behind a perforated-metal housing backed with an acrylic diffuser. 718/456-7400. Neo-Ray Lighting Products, Brooklyn, N.Y. **CIRCLE 250**



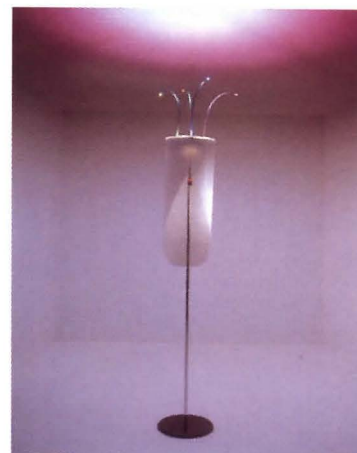
▼ LED exit signs

Pathfinder exit signs use light-emitting diode sources that produce an average letter luminance of 5 footlamberts, well above code, and draw very little power. Signs may be ordered in red or green letters, single- or double-faced. 540/382-6111. Hubbell Lighting, Inc., Christiansburg, Va. **CIRCLE 251**



► Polychromatic illumination

Lighting designer Ernesto Gismondi says his new Metamorfoosi "create atmospheres." Luminaires have miniature, computer-controlled projectors that direct light from three 100W halogens through red, blue, and green dichroic filters. Blended, these beams become a single color that varies as the illumination intensity is altered. 800/359-7040. Artemide, Farmingdale, N.Y. **CIRCLE 252**



▲ In-grade floodlights

An extension of the Nite Star MR16 exterior fixture line, the Well Star can be used in the most rugged applications subject to heavy automotive and pedestrian traffic. A solid-brass well cover and tempered-glass lens resists breakage from impact in "drive-over" locations. Housing is made of

a plastic-composite, and can be specified with a concrete-pour collar where a completely flush installation is required. A stainless-steel aiming bracket permits adjusting the spot over a 35-degree range; well cover is secured by recessed, tamperproof screws. 209/255-5300. B-K Lighting, Inc., Fresno, Calif. **CIRCLE 253**

▼ Low-mercury HPS lamps

Phillips has extended its environmentally benign Alto technology to its high-pressure sodium lamps. With 75 percent less mercury than other HID lamps, Alto HPS lamps meet EPA standards for non-hazardous disposal. 800/631-1259. Philips Lighting Co., Somerset, N.J. **CIRCLE 255**




▼ Decorative wrought iron

Hand forged, 39-in. tall lantern is from an extensive line of interior and exterior lighting that incorporates the grace and detail of Colonial-era Mexico. Finish options include rusted colors, verde, and antiqued gold. 818/508-0993. Arté de Mexico, Burbank, Calif. **CIRCLE 256** ■



◀ "Floating" rail system

A low-voltage, halogen installation, MonoRail can be bent by hand into simple, smooth curves to follow or accentuate architectural shapes. Adjustable standoffs are "almost invisible." Rail can be specified in chrome, gold, or satin-nickel finishes; system is designed to accept individual MR16 lampholders of up to 75 watts each. At only 2-ins. square, fittings such as junction boxes and power feeds are neat and unobtrusive. Decorative lampholders include glass pendants and the aimable Aero light, pictured. 773/252-0008. Tech Lighting, Chicago. **CIRCLE 254**



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CIRCLE 56 ON INQUIRY CARD

How Do We Wire the Ever-Changing Office?

WHILE STANDARDIZATION IS SIMPLIFYING TELECOM-CABLE DESIGN, "ALTERNATIVE" OFFICE SCHEMES ARE COMPLICATING IT.

by Walter Cooper and Kenneth Silver

Alternative approaches to work—networking, “hoteling,” and teaming—are becoming increasingly important in the American workplace. And these new ways of working are driving changes in office buildings’ infrastructure, including wiring for electrical power, telecommunications, and building-controls systems.

On one hand, recent advances in wire and cable technology, coupled with the development of new standards for their use, have made it easier than ever for designers to choose what type of wire or cable to install. In addition, a recent change in the standard that governs commercial wiring has made it possible for architects to meet their clients’ desire for increased flexibility by using “zoned” wiring systems, which permit some reshuffling of computers within an office plan with minimal rewiring. These advances, however, come with strings attached. Today’s more technically advanced wires and cables must be handled with increased care to avoid damage. And, even though the new zoned systems require a great deal of extra planning and investment, they only satisfy clients’ desires for more flexible office systems to a very limited extent.

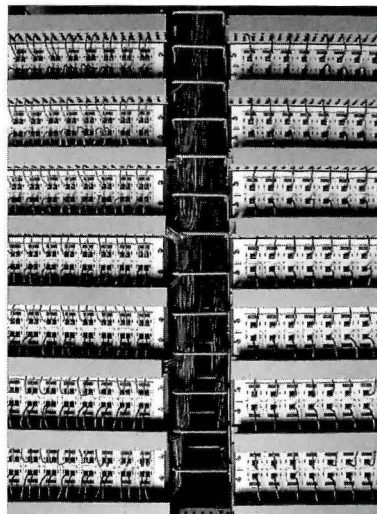
Appropriately accommodating WANs and LANs

Rapid change in wide-area networks (WANs) and the ubiquity, nowadays, of local area networks (LANs) are forcing a basic rethinking of office-building telecommunications-infrastructure design. The term WAN today commonly refers to a collection of cables that carry signals from the building to and from an outside source. Because of the importance of uninterrupted communications, WAN systems typically are configured as a ring containing two points of access and egress from the building. This system design, known as a self-healing ring, prevents network disruption by allowing signals to travel via the secondary entrance if a break occurs somewhere along the cable loop.

Continuing Education This month's installment of the ARCHITECTURAL RECORD/AIA continuing-education series covers the design of building telecommunications, power, and electronic infrastructure. Use the following learning objectives to focus your study. After reading this article, complete the questions (pages 214) and check your answers (page 216). AIA members may fill out the self-report form and send it in for two AIA Learning Units—Mark Scher, director, AIA Continuing Education Programs and Products

Learning Objectives After reading the article and completing the exercises, you will be able to:

1. List two positive implications for building tenants resulting from cable improvements and wide-area network configurations.
2. Discuss the pros and cons of underfloor, ceiling and wall based, wireless, smart device, and poke-through wire handling technologies and approaches.



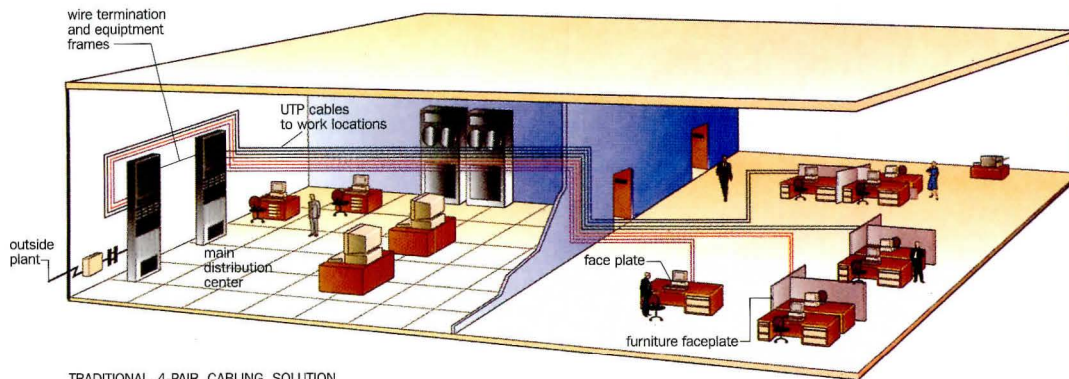
Building tenants not only benefit from additional protection from system failure, they get built-in price competition, because this kind of system design is used by rival telephone companies to install networks. These competing telephone companies may be willing to pay for the installation of their own cables and equipment for the opportunity to sell their services to tenants. As a result, building occupants not only have more choice, they can switch companies in case of emergency.

Such communication networks require a physical infrastructure that mirrors their ring configurations. These and other network requirements should be considered from the very earliest stage of the design process. Architects must provide at least two service entries into the building for wire connections. Where network rings are extended from floor to floor, multiple risers are needed, even in buildings with relatively small floorplates. In addition, space must be set aside in which the many possible vendors of WAN services may locate their equipment. Designers must take care to provide enough space in both telecom rooms and service entrance conduit banks for several WAN suppliers to use.

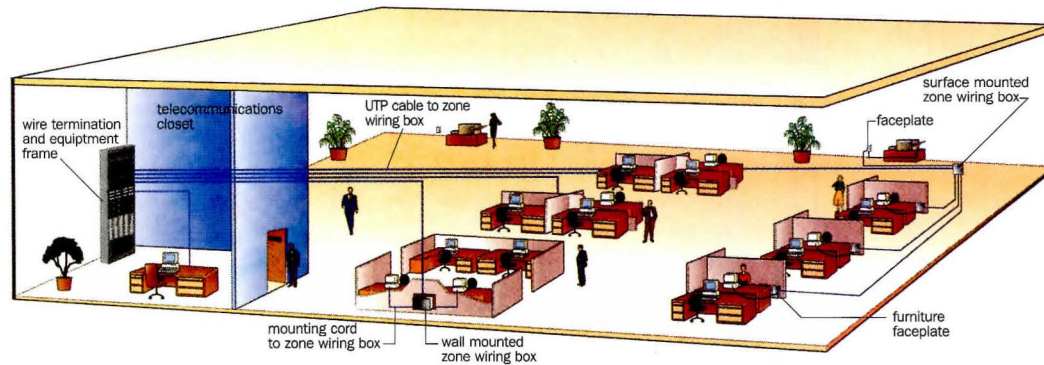
Wiring by zone

Until very recently, wiring standards haven’t addressed the dramatically increasing need—fostered by various teamwork models that businesses are adopting—for flexibility and portability of network technology within the office itself. That’s changed, however, with the 1996 TSB-75 revision of the Electronic Industries Association (EIA) 568 standard for commercial wiring, which now permits zone wiring. Previously, individual workstations had to be hard-wired—that is, connected to a telecommunications closet by an uninterrupted length of cable. With this revision, however, workstations can be plugged into multi-user boxes arranged on a grid beneath an access floor. [See drawings next page for comparison.] In some workplaces, this offers immense advantages by minimizing rewiring when reconfiguring furniture and equipment.

Walter Cooper is a principal and Kenneth Silver is a senior associate at Flack + Kurtz, Consulting Engineers, New York City. The firm specializes in consulting for such intense users of data as Wall Street brokerages and investment firms.



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COPPER ZONE CABLING SOLUTION

Though zoned wire-delivery systems (bottom drawing) are not for everyone, their chief advantage is that users can move or reconfigure a workstation without changing wiring all the way back to the telecommunications closet, as is required with conventional systems (top drawing).

COURTESY LUCENT TECHNOLOGIES

As with almost any technical advance, however, the wiring-standards revision also carries some disadvantages that may make it inappropriate. These zoned wiring plans work most effectively as underfloor systems; they shouldn't be considered unless a client is willing to pay the higher initial costs associated with access floors. Zoned wiring systems are not well suited for use above ceilings, for example, because zone boxes need to be accessible on a routine basis, and ceiling boxes are deemed too hard to reach. Mounting multi-user boxes to columns or walls is often undesirable because wiring ends up exposed—lying on floors or dangling from walls after furniture is rearranged.

The proliferation of connection points in a zoned system also magnifies the complexity of system administration. A zoned system can make it more difficult to keep track of changes, and can complicate the task of troubleshooting when problems arise. Also, the addition of break points at the boxes decreases a wiring system's "headroom," or available transmission capacity. This means that zoned systems that are perfectly adequate for current technologies may prove inadequate for new communications devices that demand greater bandwidth or data capacity. If physical furniture reconfigurations are not actually very frequent, it makes economic sense to stick with wiring each device all the way to the closet—both to avoid the zoned system's greater initial cost and to avoid limiting the usefulness of the cabling system.

Still in the future: "plug-and-play" networks

Wouldn't it be nice to access your computer network from any desk, and have calls to your phone routed automatically to wherever you are? Despite the advent of zoned systems, this coveted dream is not yet a practical reality. Although this portability may be enhanced by wireless communications, it is an unhappy fact that the currently achievable degree of portability is much lower inside the office than outside. Part of this has simply to do with expectations: outside the office, users have got-

ten used to the limitations of modems, analog phone lines, and cellular phones, and are much more willing to put up with a variety of glitches that they'd find unacceptable in the office setting.

Unfortunately, even with zoned underfloor systems, moving a computer or a telephone line from one location to another isn't yet a simple matter of taking a plug from one socket and plugging it into another. Office administrators generally do not encourage telecommunications-equipment portability because it increases equipment maintenance. Likewise, LANs cannot accommodate much movement of computer equipment because of limitations in the way networks are structured. Though a single LAN may incorporate a large number of machines, current network technology dictates that the users be subdivided into groups of no more than about 25. Thus, if a terminal is moved outside its subgroup, administration of the system becomes difficult and communication may begin to break down. (The few "portable" systems that do exist are fairly small, and require a large systems-support staff.)

Wireless technologies are not the magic bullet

Another apparently simple solution is wireless technology, with its potential to avoid a wide range of costly hardware. Today's rapidly developing and proliferating wireless technologies are having a much greater impact outside buildings than inside, where their limited data capacity is a significant drawback. Wireless technologies have, however, already demonstrated significant usefulness in building types in which a high need for portability and mobility is coupled with relatively low data demand. In convention centers, for example, wireless systems are appropriate because the space is reconfigured frequently, there is a low device density, and the need for mobility is high.

In typical office environments, wireless communications technologies are unlikely to come into widespread use in the near future. In addition to slow data-transmission rates, there is another, possibly insur-

ARE OFFICES OVER POWERED?

The amount of electricity actually required to run a contemporary office building—and the amount that such facilities will require in the near future—is a matter of contentious debate. Today's de facto design standard of about 5 to 6 watts per sq ft is probably twice as high as it needs to be—and may quickly become as much as four times too high. Overdesigning power systems is wasteful in two ways: in the cost of installing and operating the power system itself, and in oversizing the air-conditioning, since cooling assumptions are based on the power designed for the building.

Though owners and designers often assume office power use will increase, office device-density has probably reached its maximum. The amalgamation of various functions into single pieces of equipment is

likely to keep numbers stable. Also, under EPA's Energy Star program, manufacturers of computers and other office equipment have been voluntarily decreasing their products' power usage.

So far, these savings (see table), though phenomenal, mostly affect average load. Technical innovations arising out of laptop technology will begin lowering peak loads significantly. Reasonably priced flat screens will be widely used within 10 years. With their much lower power demand and heat generation, we may rapidly reach the point where a conservative power system design will call for an average of only 1.5 watts per sq ft. One-watt-per-sq-ft designs have been achieved in environmentally sensitive, showcase projects like the National Audubon Society

headquarters and the Natural Resources Defense Council, both in New York City. These designs require committed clients.

Power-system design has also been affected as once-centralized data-processing machinery has shrunk in size and been dispersed throughout facilities. Dedicated

computer rooms often need uninterruptible auxiliary power, augmented air conditioning, and special power-distribution units. Though servers will continue to shrink in size and increase in number, many will still need the power, hvac backup and security features that centralized data centers have always had. ■

EQUIPMENT	NO. OF UNITS	CONVENTIONAL OFFICE EQUIPMENT			"ENERGY STAR" OFFICE EQUIPMENT		
		ANNUAL ENERGY COSTS PER UNIT	TOTAL ANNUAL ENERGY COST	COST OVER 5 YEARS	ANNUAL ENERGY COSTS PER UNIT	TOTAL ANNUAL ENERGY COST	COST OVER 5 YEARS
PC/MONITORS	100	\$39.41	\$3,941	\$19,705	\$19.55	\$1,955	\$9,775
FAXES	20	\$24.53	\$491	\$2,453	\$10.94	\$219	\$1,094
PRINTERS	30	\$60.14	\$1,804	\$9,021	\$21.47	\$644	\$3,221
COPIERS-MEDIUM	20	\$99.64	\$1,993	\$9,964	\$42.95	\$859	\$4,295
COPIERS-LARGE	10	\$224.19	\$2,242	\$11,210	\$93.64	\$936	\$4,682
PAPER COSTS	10	\$2,250	\$22,500	\$112,500	\$1,600	\$16,000	\$80,000
TOTAL			\$32,971	\$164,853		\$20,613	\$103,067

SOURCE: ENVIRONMENTAL PROTECTION AGENCY

mountable obstacle: the available spectrum (radio frequency and infrared) is very limited, and, once it's gone, the system slows down or stops altogether. This "headroom" problem can be worsened by encryption schemes needed to ensure communications security when the signal is airborne. Generally, these encryption technologies reduce a system's throughput and complicate its operation.

Wireless communications confer little advantage in office environments where layout "churn" is infrequent. Since work stations require hard wiring for power and task lighting anyway, freeing them of the communications wire does little to augment flexibility. Ironically, wireless systems actually make internal reconfigurations of space and furniture more burdensome, because a great deal of care must be taken to ensure that the location of furniture and walls doesn't affect system performance. Also, wireless devices need batteries. Currently available batteries must frequently be recharged—on a wired device.

All these caveats aside, however, there's no question that wireless communications will play some—perhaps an increasing—role in future office environments. The mobility wireless can offer workers may, in niche functions, outweigh its disadvantages. Wireless systems will impose certain design constraints that architects need to become familiar with. For example, if antennas are to be concealed in ceilings, designers must be aware of the radio transparency of the materials they specify—and ceilings must incorporate wire pathways to service those antennas. (The obvious irony is that "wireless" systems actually require quite a bit of wiring!) Specific applications of wireless may call for specific design strategies. For instance, it would make sense to design the core of a million-sq-ft highrise to allow for an antenna system when a wireless system will link facilities-maintenance personnel throughout the building.

Whether or not a given facility uses wireless, the growth in mobile wireless communications systems is now providing architects with an additional challenge: designing accommodations for antennas on the

exteriors of buildings. Owners are leasing their exterior real estate in major cities to telephone companies and other providers, who need more antennas to keep up with demand driven by cellular phones and pagers. Architects have already become adept at designing rooftops to accommodate antenna requirements; now they are being asked to add antennas at, say, five or six stories off the ground, or to specify radio-transparent surfaces to disguise antennas in the mechanical floors of highrises.

Where to wend wires

With the standardization of data and telecommunications protocols, there's no longer the proliferation of proprietary cabling that, a decade ago, seemed as if it might strangle us all in heaps of multicolored spaghetti. Although the standardization of telecom cable has not in every case meant that there's a smaller total amount of the stuff, the fact that there are fewer different kinds of cable to worry about—and that high-grade cable has gotten a lot thinner over the past few years—means that the volume of cable for each workstation has leveled off. This has changed the equation by which architects select wire-handling solutions.

Access flooring products have undergone great improvement in quality, as well, providing a much more solid feel than they used to. Also, access-floor tiles have gotten much thinner. This, coupled with thinner wire, has permitted a significant reduction in the depth of access flooring needed. (Just a few years ago, the minimum depth—slabtop to top of tile—was between six and eight in.; today, it's easy to get away with a depth of four in.) Moreover, access-floor voids can be used for ventilation as well as cable distribution—a strategy that's been fairly widely implemented in Europe. This may make access-floor systems more attractive in North America. Using underfloor ventilation in conjunction with a separate ceiling-panel radiant heating and cooling system seems especially promising [RECORD, October 1995, pages 70-85].

Access floors remain prohibitively expensive for many facilities, however. And, despite the fact that it's gotten shallower, access flooring presents a range of design problems—ramps, elevator offsets, slab depression, and so on—with which architects have become all too familiar.

Other types of underfloor distribution systems, such as *cellular floors*, have fallen out of general use in new buildings because of the difficulty of maintaining them and the core drilling and concrete work needed to utilize them over time. The in-slab duct systems with which many facilities were equipped in the recent past will remain usable, and it's important to note that the benefits and problems of the new types of cable affect them as well.

Poke-through wire handling has significant limitations, even though it has been popular for its low initial cost. (In poke-through installations, wire is carried from the workstation down through a floor penetration and runs along the ceiling of the floor below.) It is best suited to spaces with low device density—a large lobby, for example, that might have a single reception desk. It is difficult to move penetrations and patch them. And each hole through the slab weakens it, which is harmful to the building's structural integrity.

Ceiling- and wall-based distribution systems may offer a good compromise between cost and flexibility. A wide variety of ceiling- and wall-based wire management strategies have been worked out that respect the working style of particular clients.

More important, there is room enough in walls and ceilings to deal with the geometrical sensitivity of high-performance cable. Newer forms of high-grade cable are more delicate. For example, the minimum bending radius of copper cable is relatively large, more like that of optical fiber. High-performance cable, however, can't be just draped over ductwork in a ceiling, but must be adequately supported along its entire length. Pathways must incorporate plenty of room for soft bends and they must have multiple access points to allow the cable to be moved around (when necessary) without damage. And neither high-grade copper cable nor optical fiber will tolerate being pulled through long lengths of conduit. To avoid damage, conduit-enclosed distribution systems require pull-boxes at frequent intervals, even in a building core. Pull-boxes aren't only expensive—they're also big, which means that some care must be taken to provide room for them within the distribution system.

In mapping out cable pathways, designers must, of course, be careful that telecom and power cable are placed in separate conduits and that minimum distances between the two be maintained for data integrity. However, there is also a 3-in. required distance between telecom cable and fluorescent light fixtures. Electrical noise generated by the ballasts of fluorescent lamps may have an effect on the performance of high-speed data systems.

Progress in controls technology

Standardizing building-controls protocols would make life easier for both designers and facilities managers, but progress has been slower and more uneven than the standardization of voice and data electronics. What this means is that the degree to which control systems and devices made by different manufacturers can be integrated isn't yet nearly as high as the degree of compatibility between different data and telecommunications systems and devices. The delay in standardization, caused in part by many building-controls manufacturers' resistance to adopting universal, non-proprietary protocols, is, however, beginning to abate. More and more manufacturers are choosing to use the inexpensive, flexible protocols developed by suppliers of computer-network hardware, software, and ser-

vices, such as Echelon Corporation. This trend is gradually leading to a de facto standardization of building-controls systems. Echelon's LONworks is widely used, but as yet no company's standards have come to dominate the industry.

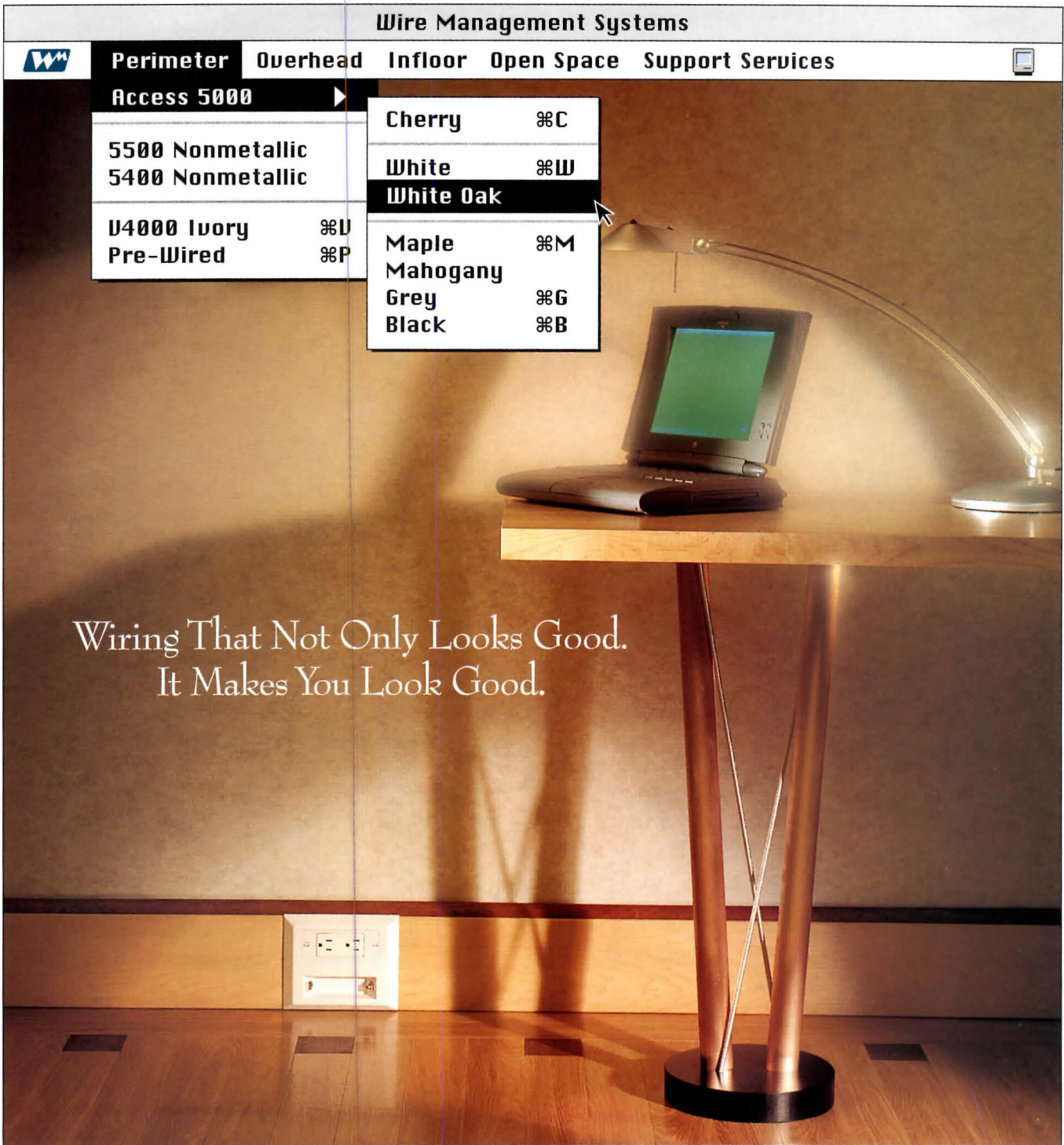
Two contrary control trends are muddying our view of the future. On the one hand, building "intelligence" has been shifting away from centralized systems to individual devices. "Smart" light switches, motion detectors, and the like are examples of products that eliminate control functions once operated from a central building-management system. Since such devices don't need a wire to the central system, the multiplication of these independently operating devices should reduce hard-wire costs and complexity. However, such devices sometimes do strange things: a motion detector may switch the lights off on a motionless worker. On the other hand, microchip intelligence can now be readily built into more building products, which means that more products are "wired-in" to the building. "Smart" window glazing, for instance, can change its opacity and reflectivity according to external weather conditions, internal heating and cooling needs, or user desire. Since many of these new devices will need connections to a building-wide control system, the capacity of the control system will have to increase, and wires, contact points, and sensors will actually increase.

The retrofit challenge

Among the benefits of smaller, more standardized cabling systems is that the retrofitting of wire- and cable-distribution systems for older buildings has become generally a great deal easier. Historic preservation or adaptive re-use projects, however, can be just as nightmarish as ever. Such variables as small rooms, masonry partitions, and irreplaceable historic finishes that can't be altered make the job of routing wire enormously complicated. Even if the area to be wired theoretically meets cable-length and connection-point limitations, the kind of over-under-sideways-and-through routing that's needed in many preservation projects sometimes increases those distances unacceptably. Moreover, it is difficult to design in flexibility for future changes.

Buildings with very large floorplates—ironically often built for layout efficiency—may face similar problems. To meet wiring-distance maximums, distribution closets may need to be distributed at intervals around the floor, which may make layouts more complex. It is in such difficult circumstances, that wireless systems may offer a solution despite the limitations of the technology.

Near-revolutionary changes are in the offing. They are not telecom related, but are due to the rapidly shrinking electrical-power needs of office machines. Already, many designers are oversizing power systems, anticipating that power-hogging PCs, printers, fax machines, and copiers will continue to burgeon. Instead, power needs are stabilizing and may soon decline as energy-conserving equipment comes into wider use (page 175) and once-separate pieces of equipment (computing, fax, telephony) are combined. Other innovations arising from laptop-computer technology will also reduce energy needs, especially all-important peak loads. Lower-voltage busses, more efficient circuiting, and complementary metal-oxide semiconductor technology (CMOS) are all coming into wider use. Inexpensive flat-screen technology will move rapidly into the desktop market and may make the greatest difference of all, since such screens will require as little as one-eighth the power of today's cathode-ray-tube (CRT) monitors. They will radiate less heat too. Flat screens will also alter office lighting design because they are less affected by glare, and their thinness will allow much greater desktop-design possibilities. ■



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Prizes: Three winners will be selected from each division and receive one choice from the following prizes offered by this year's sponsors: Autodesk's AEC Professional Suite, a \$4,095 set of CAD tools, including AutoCAD R13c4a, AutoVision and Architectural Symbols • Bentley Systems' Microstation TriForma, a 3D modeling and 2D documentation program, value \$5,350 • A 3-application software package from Graphisoft: ArchiCAD (object-oriented 2D/3D CAD software), PlotMaker, and Artlantis Render • Lightscape's Lightscape Visualization System, a realistic rendering and lighting

package, a \$2,995 value • Nemetschek's Allplan FT, fully integrated, object-oriented building-design software. Winning entries will be published in the June 1997 issue of ARCHITECTURAL RECORD and on the magazine's World-Wide Web site, and exhibited at the A/E/C Systems '97 computer exposition.

Rules: Projects delineated can be real, potential, or speculative, but must not have been previously published in a design or computer journal as either editorial or advertising. Images prepared solely for promotional use by manufacturers are also ineligible. An entry may be created on any platform, using any hardware or software. Submit hard-copy (maximum size 11 in. by 17 in.), 35mm slides, or VHS cassette (the latter only for animations). Submit single images, except where a suite of images is essential to describe the concept. Entries must be received by Wednesday, February 26, 1997. They remain property of owner, but may be republished in print and electronically. Entries must truly represent role of collaborators, firms, and clients. Include a stamped, self-addressed envelope for return of entry. Queries: 212/512-4256 (fax); jarussel@mcgraw-hill.com (e-mail).

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<i>Please tell us the hardware, software, and output devices you used. List by company and brand name (i.e., Autodesk AutoCAD 12, Apple Power Macintosh 6100)</i>		Names of collaborators (firms or individuals) who should be credited		
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NEW PRODUCTS

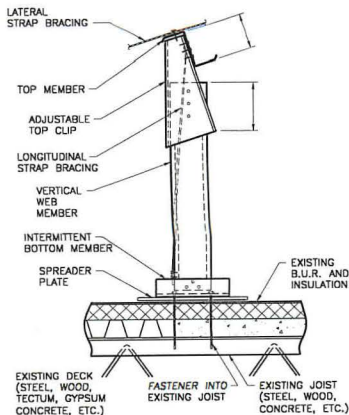
ADJUSTABLE FRAMING SYSTEM PUTS A NEW ROOF OVER OLD

The Cura System is a labor-saving way of putting a new, sloped roof over an existing flat or odd-shaped roof. Light-gauge steel framing, galvanized or red-oxide painted, is factory-cut to the exact length required by the design, slope, and loading criteria specified by the architect, and shipped to the site ready to erect. The system's unique feature is a clip assembly that lets the installer precisely adjust individual members to suit minor roof-field irregularities and to maintain the slope and alignment needed by the new roof. Framing can produce slopes from 1/4:12 to 12:12 or greater. Though the Cura framing is most commonly used for metal-panel roofs, the system will support other roof types.

The designer must verify the

condition and capacity of the existing roof structure and insulation. To prevent buildup of damaging condensation in the void between old and new roof, sufficient ventilation should be included in the new roof design via eave and ridge vents or louvers. The Cura System can meet high-wind and other performance standards specified, such as ASTM E 1592-94.

Working from a copy of the existing roof plan (especially useful are as-builts that illustrate the spacing, direction, and type of the underlying structure), the new roof profile sketched by the architect is translated into CAD. After drawings and details are approved by the designer, the necessary steel supports, joists, and cross bracings are cut and shipped, along with con-



struction drawings to guide the roof contractor in correct assembly. Cura framing attaches to the bar-joist, concrete-deck, or similar underlying structure of the building, using intermittent or continuous sill members as needed to reduce point loads. When roofed with metal panels, the total dead load of an installed Cura system is less than 3 lbs per sq ft. [Daniel P. Coffey & Associates was the architect for the roof project shown.] 800/280-2872. ReRoof America, Inc., Tulsa. **CIRCLE 201**

New Products this month covers roofing systems particularly appropriate for renovation. A new roof gives the architect a chance to correct design flaws, such as depressions from uneven building settlement that allow water to pond, and insufficient insulation. A new roof profile or material can completely change the appearance of the building, creating a more attractive and competitive facility. Re-roof systems covered this month are not necessarily new, but each has a particular advantage in specific situations. Literature pages also cover roofing in a renovation context. And the Product Briefs page includes a "new" 58-year-old Frank Lloyd Wright table and a door handle with raptor overtones.

—Joan F. Blatterman, *New Products Editor*

SPRAY-ON FOAM CREATES A SEAMLESS ROOF

Dow Corning/Polycoat's 3-5000 sprayed polyurethane foam (SPF) roofing has been in use for 25 years—long enough to have exposed any inherent deficiencies or long-term performance problems. A three-part system, consisting of a monolithic sprayed-in-place layer of polyurethane foam covered by a waterproof silicone-rubber coating applied in two layers, it creates a seamless, monolithic weather barrier. The silicone membrane is described as vapor permeable, and can be specified in dark gray, gray, and beige. SPF systems are particularly useful in re-roofing, weighing only about 28 lb per 100 sq ft. Applied in

passes about 1 1/2-in.-thick, the foam can create slope and cure standing-water problems. Properly applied, foam will adhere to almost any substrate, including weathered bituminous roofing. Said to be "self-flashing" around vents and other penetrations, SPF can build its own cants (inset). And with an R-factor of 6.5 per in., the foam can significantly upgrade the thermal performance of an existing roof.

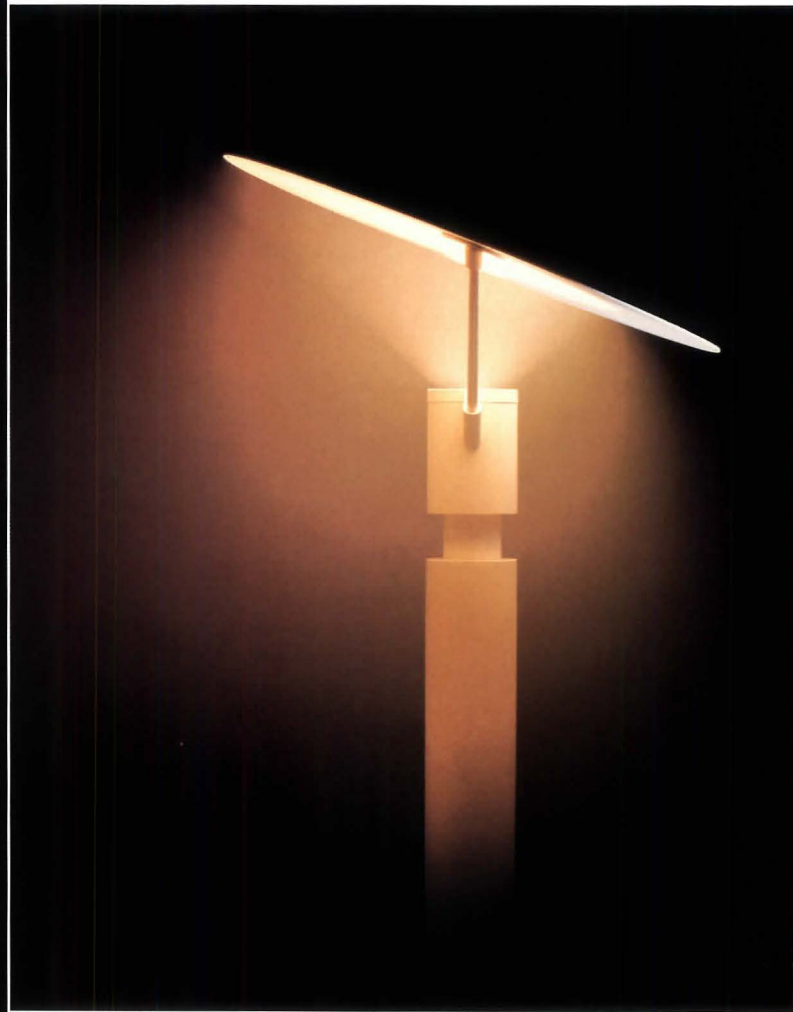
The 3-5000 roof has a Class A rating from UL, and meets SBCCI, BOCA, and ICBO codes. 800/547-4004. Polycoat Systems, Inc., Hudson Falls, N.Y. **CIRCLE 202**
(Continued on page 190)



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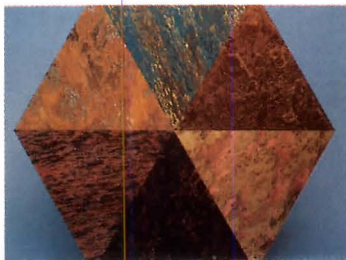
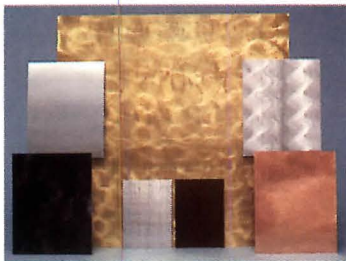
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Circle No. 69

PRODUCT BRIEFS

▼ "Wood-grained" steel door

GrainTech is a new option for fire-rated steel doors. Panels are embossed in a grain pattern and primed to accept realistic wood-stain colors (mahogany shown). 513/745-6400. Steelcraft/Ingersoll-Rand Co., Cincinnati. **CIRCLE 203**

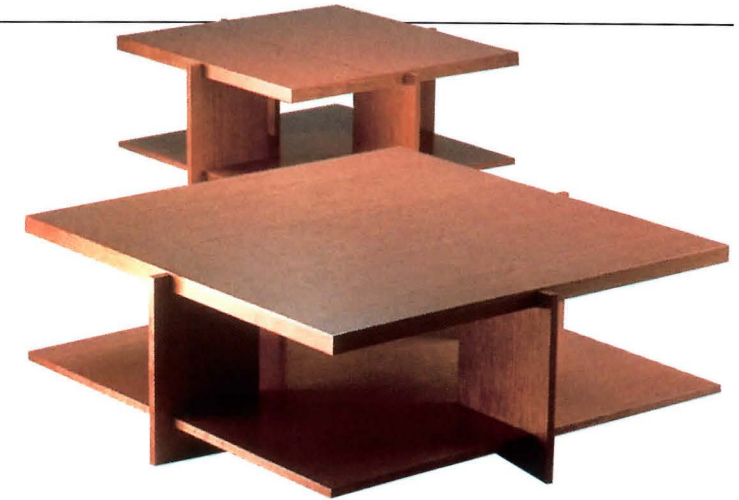


▲ Laminated/metal

For interior use, decorative metal sheets are now available with a phenolic backer, an option said to make panels easier to fabricate and to add rigidity when needed for specific architectural applications. Mettle Mica patterns (top) are solid anodized aluminum; abstract Vortex designs (above) replicate the look of wrought iron, pewter, slate, and oxidized metals in solid brass, copper, or aluminum. Sample kit offered. 800/628-9346. The October Co., Easthampton, Mass. **CIRCLE 204**

◀ Exterior millwork

Classic architectural pediments, pilasters, arches, sunbursts, and other decorative window and door treatments are made of high-density urethane to resemble white pine. A catalog shows all designs, available in a two-week lead time. 800/367-1076. Life-Time Preformed Millwork, Eighty-Four, Pa. **CIRCLE 205**



▼ Striking entrance hardware

New solid-metal Talon pulls come in 12- and 8 1/2-in. lengths for System C mounting on wood, metal, and glass doors. The new design is particularly dramatic installed in different sizes back-to-back on a glass door (below). Bronze and stainless-steel cabinet hardware is also offered in Talon styling, with drawer and finger pulls echoing the distinctive shape. Doorpulls can be specified in five bronze-finish options. 800/451-0410. Forms + Surfaces, Carpinteria, Calif. **CIRCLE 206**



▲ Wright coffee table

The latest furniture reproduced under license from the Frank Lloyd Wright Foundation includes low cherry-wood tables, replicas of pieces designed originally for the Lloyd Lewis house in Libertyville, Ill. (1939-1942). There are two sizes, 35- and 45-in. square, both 16-in. high. Shown in natural cherry, the Lewis table can also be ordered stained walnut or black. Prices start at \$1,650. 516/423-4560. Cassina USA, Inc., Huntington Station, N.Y. **CIRCLE 208**

▼ Pre-primed cedar siding

StepSaver is tight-knot solid red cedar that comes factory primed front and back, and on top and bottom edges. Intended as a competitively priced, low-maintenance residential exterior, the siding is milled in bevel-edge, channel, and tongue and groove profiles. Four-side priming is said to stabilize the wood and greatly extend its long-term performance and good appearance. If StepSaver siding is painted on site with Olympic/PPG's latex, the mill and paint manufacturer will guarantee the finish for 15 years. 360/352-7633. Skookum Lumber Co., Olympia, Wash. **CIRCLE 209**



◀ Innovative retail display

A custom retail display designed for Brandywine Sports by architect Tony Horton and store designer James Madden is based on a 9-by 22-ft vintage baseball photo blowup reproduced on Surface System modules. Made of individual 24-in. panels that can follow the curve of the wall, the wall treatment is mounted on a metal grid that can receive merchandising accessories such as clothing racks. 216/343-6621. Marlite, Dover, Ohio. **CIRCLE 207**

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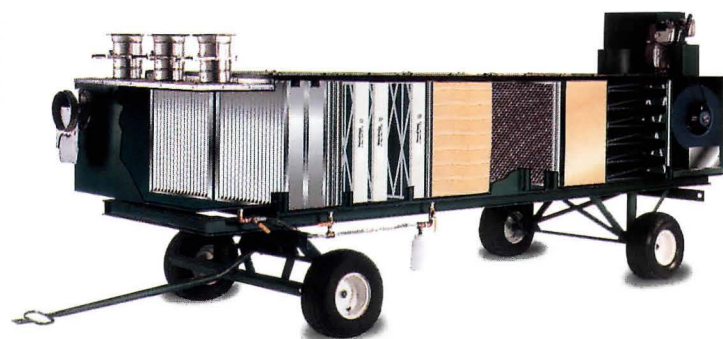
CIRCLE 70 ON INQUIRY CARD

LAMINATED SHINGLES HAVE A REALISTIC WOOD-SHAKE APPEARANCE

For new residential construction or as an upgrade to an existing three-tab roof, Tamko's Heritage laminated-fiberglass shingles come in three weights, all meeting UL wind-resistance and Class A fire standards. The heaviest, M40, comes with a 40-year guarantee. Made to replicate the look of wood shakes, shingles are colored with

surface granules blended in naturalistic shadings of gray, green, gold, and brown.

Three of the newest American Heritage colors are shown here: Thunderstorm Grey, installed on the home (left), Harvest Gold (top) and Autumn Brown (bottom). 800/641-4691. Tamko Roofing Products, Joplin, Mo. **CIRCLE 210**



EQUIPMENT ELIMINATES JOBSITE ROOFING FUMES

Though coal tar and asphaltic roofing materials fall within permissible VOC limits during most roofing installations, these bituminous compounds produce a characteristic intense odor in the hot, molten state needed for correct application. These objectionable smells have precluded designers from specifying such roof materials where occupants of structures being renovated must not be disturbed. Mobile FRS-6000 (fume recovery system)

equipment (above) was developed to capture and systematically filter these fumes and smoke to "nearly undetectable" levels. The manufacturers claim that the FRS will permit roofing during business hours, even at the most sensitive locations like schools and hospitals. Positioned next to the hot-tar tanker or kettle, the equipment diverts and cleans fumes before they become irritants. 800/468-9629. Koppers Industries, Inc., Pittsburgh. **CIRCLE 211**

TOOLS

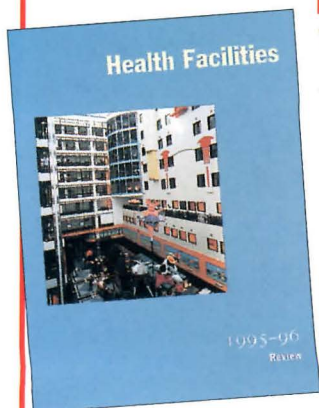
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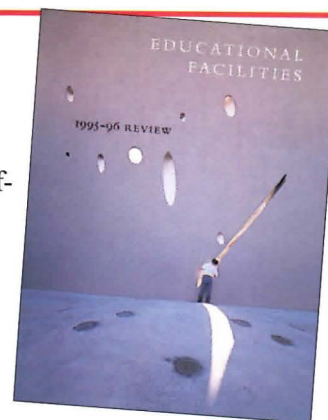
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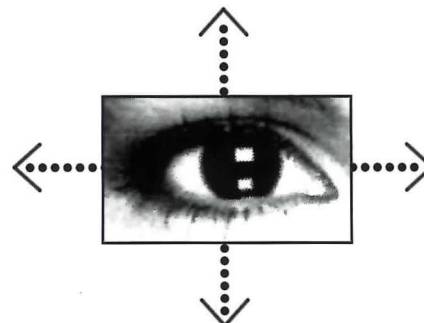


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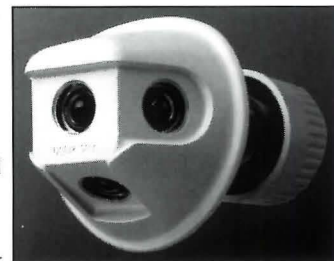
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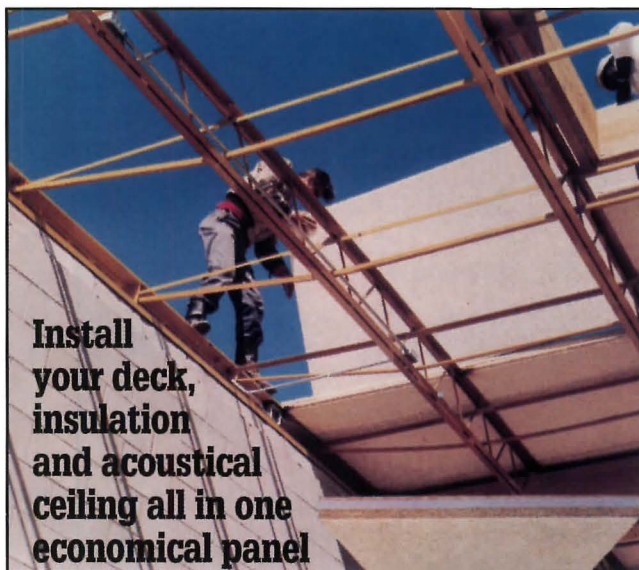


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CIRCLE 73 ON INQUIRY CARD

PRODUCT LITERATURE

Coal-tar roofing applications

A four-page technical brief, *The Chemistry of Roofing Materials* explains how the molecular structure of coal tar produces a roof said to have superior resistance to UV, moisture, and temperature cycling over time. Text and illustrations describe and compare the major classes of organic roofing materials—pitch, asphalt, modified bitumen, and elastomeric rubbers—and examine the mechanisms by which roofing membranes eventually deteriorate under the influences of the “four enemies:” UV, oxidation, water, and chemicals. Coal tar is described as achieving an “impermeable” water-proof roof even under dead-level conditions. 800/221-6490. Allied Signal Commercial, Cary, N.C. **CIRCLE 212**

Metal-roof capability

A four-page brochure highlights various H.H. Robertson, Smith, and Steelite systems that are now joined to create the Centria roofing-product line. Detail drawings illustrate both architectural and

structural roofing panels; all seam-profile options are shown. 412/299-8000. Centria, Moon Township, Pa. **CIRCLE 213**

20-year membrane

A hot-air-welded single-ply system, the SR80/20 roof is 80-mils thick, and approved installations are backed by a 20-year performance warranty. Made with a polyester-reinforced thermoplastic sheet, the roof meets all applicable UL, FM, and model-building code weathering, wind-uplift, and fire-resistance standards. 800/457-6634. HPG Roofing Systems, Somerset, N.J. **CIRCLE 214**

Single-ply over metal retrofit

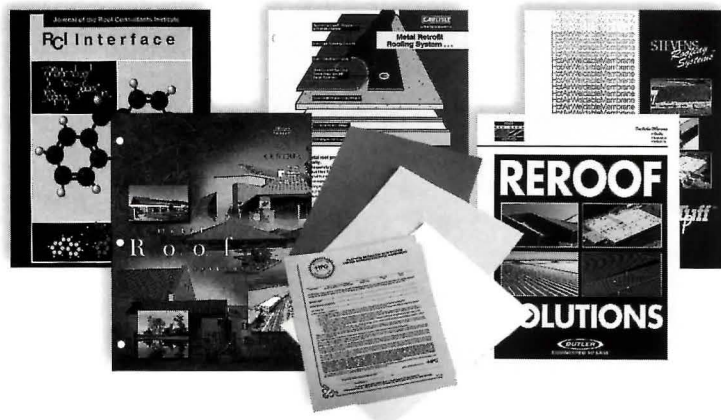
Carlisle offers a polyester-reinforced membrane system specifically for use over failing metal roofs. A proprietary fastener is said to attach the sheet to structural purlins without compromising wind- or weather-resistance. The metal retrofit system may be specified in either black Sure-Seal or white Brite-Ply membranes. 717/245-7000. Carlisle SynTec Inc., Carlisle, Pa. **CIRCLE 215**

Reroofing with metal panels

A short-form catalog includes before-and-after photos that illustrate the dramatic appearance difference produced by placing a new metal-panel roof on an existing low-slope structure. A project-specific, life-cycle analysis can incorporate maintenance costs, useful roof life, cost of capital, tax rates, energy savings, and inflation, letting the designer compare retrofit systems with differing initial costs. 800/998-7663. Butler Mfg. Co., Kansas City, Mo. **CIRCLE 216**

TPO roofing system

A comprehensive architectural brochure details application, installation, and physical-performance information about energy-efficient white Hi/Tuff roofing. This tear- and puncture-resistant material is described as “competitively priced.” Also available: a new guide to Factory Mutual (FM) windstorm classifications, detailing approved fastener patterns that qualify for ratings as high as FM-1-120. Call 800/621-ROOF, x1079. JPS Elastomerics, Holyoke, Mass. **CIRCLE 217**



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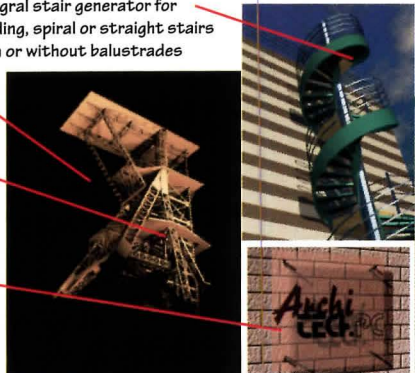
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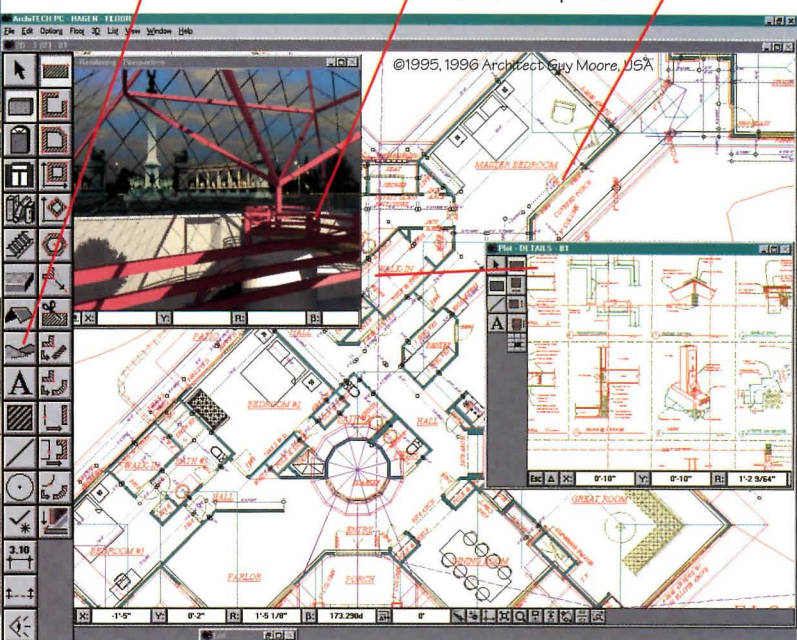
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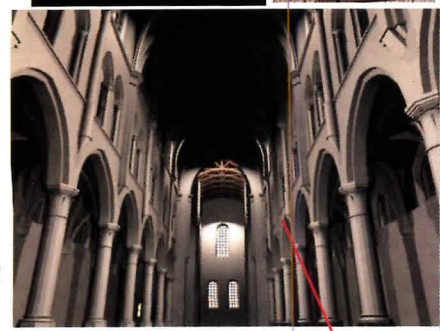
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DATES EVENTS BOOKS

Calendar

Through February 16

Metropolitan Museum of Art New York City

The career of Charles Rennie Mackintosh, with 250 works that include photos and drawings of his buildings, furniture, textiles, and the reassembled Ladies' Luncheon Room from Miss Cranston's Ingram Street Tea Rooms. Call 212/535-7710.

Through February 23

National Building Museum Washington, D.C.

"An American Embassy in Berlin" examines the recent competition for the American Embassy in the German capital. Models and drawings by the six competitors as well as the winners, Moore Ruble Yudell and Gruen Associates, are shown. Call 202/272-2448 or fax 202/272-2564.

March 6-8

Westin Tabor Center Denver, Colorado

Six PIAs (Professional Interest Areas) and the AIA risk-management committee are cosponsoring a conference, "The Client Connection". It is endorsed by the AIA Denver, AIA Colorado, and the AIA Denver Design/Build Committee. The conference will focus on ways architects can better serve their clients, offering more than 30 seminars, workshops, and programs on design-build, construction and risk management, alternative futures in the profession, and information technology and communications. For information, call 202/626-7482.

March 19-20

Los Angeles Design Center

WestWeek 97 will celebrate European furniture and interior design with major sponsors and keynote speakers from Italy, France, and Spain. Call Bret Parsons at 310/657-0800, extension 240 or fax 310/652-8576 for information.

April 4-6

Washington, D.C.

The National Solar Energy Society will present a collaborative conference with several organizations, including the AIA. The program covers sustainability, viability, and the prosperity of renewable and solar-energy technologies.

Presentations will include alternative building systems, daylighting design tools, and building case studies. AIA Learning Units can be earned. Contact the AIA Professional Interest Area information line at 800/242-3837.

April 4-6

Asilomar Conference Center Pacific Grove, California

The AIA California Council will hold its 13th Monterey Design Conference, called "1,000 Days: Designing the Future" after the fact that the event will fall within 1,000 days of the year 2000. An international group will address the issues. Concurrent sessions held by practicing California architects will demonstrate their creative solutions to the social issues that confront our evolving society. For more information, call Traci Bockes at 916/448-9082.

Competitions

First annual **Business Week/Architectural Record Awards**, sponsored by the American Institute of Architects, will recognize achievement in creative management practices and design solutions. The deadline for registration is March 17, and for entries, April 18. Categories include design that supports alternative work practices and increased productivity; design that boosts a new corporate image or changing corporate culture; and design that supports corporate or institutional innovation, industrial practices, and new work tools. Winners will be featured in both publications. *Business Week* is read by some six million people, many of them potential clients. To enter, call 888/242-4240 or visit the Web site at www.aia.org. Entries will be received at the AIA in Washington, D. C.

The fourth annual **Computer Delineation Award**, sponsored by ARCHITECTURAL RECORD and five systems companies, will honor originality in computer-generated drawings, renderings, or electronic models in two categories: images and electronic animation. Entries are due by February 26. Prizes include CAD tools worth up to \$4,095. There is a \$15 entry fee. For more information, see advertisement, this issue, fax 212/512-4256, or E-mail jarussel@mcgraw-hill.com.

The Architectural League of New York

announces a February 28 deadline for application for the **Deborah J. Norden Fund Grant** for study and travel. Students and recent graduates in architecture, architectural history, and urban studies are eligible to apply. For information, call the League at 212/753-1722.

AIA/Portland has issued a call for entries in its awards program, **Architecture + Energy: Building Excellence in the Northwest**. Recognition will be given for design excellence in buildings that integrate energy-efficient technology. The program is open to non-residential buildings in Idaho, Montana, Oregon, and Washington State. Sponsors are Portland General Electric and the Bonneville Power Administration. The deadline is May 30. To request an entry packet, contact AIA/Portland, 315 S.W. Fourth Avenue, Portland, Oregon 97204 or call 503/223-8757.

Registration to design the **Oklahoma City Memorial** is due by February 10. The new structure will stand on the site of the worst terrorist attack on U.S. soil—the bombing of the Alfred P. Murrah Federal Building on April 19, 1995. Also included in the brief is a visitors center, which may be housed in an adjacent existing building. To register, send a letter requesting competition materials and a check for \$25 to International Design Competition, Oklahoma City Memorial Foundation, 420 North Robinson Avenue, Oklahoma City, Oklahoma 73102. For information call 405/748-0515 or 800/491-3822.

Entries for the 1997 **DuPont Benedictus Awards** for Innovation in Architectural Laminated Glass are due March 3. The competition is sponsored by DuPont, the AIA, and the Association of Collegiate Schools of Architecture, and is supported by the International Union of Architects. This year's jury is comprised of Hugh Newell Jacobson, FAIA; Patricia Patkau, RAIC; and Christian de Portzamparc. Winners from around the world who demonstrate "significant" uses of laminated glass will be announced at the AIA Convention in New Orleans, May 16-18. For information, write Joanna Hanes-Lahr, 1100 New York Avenue, N.W., Washington, D.C. 20005; call 202/393-5247; or E-mail to haneslahr@mcimail.com.

The Village of Plainfield, Illinois together with Plainfield Partners Commercial, Ltd., and the township Park District (*continued on page 196*)

are holding a one-stage competition for the design of a new 300-acre **Plainfield Town Center** to be located directly across the DuPage River from the historic downtown. Registration costs \$90 and closes March 30. Entries are due May 1. Prizes are \$10,000, first, \$5,000, second, and \$2,500, third. To register, send check or money order to Plainfield Design Competition, Village of Plainfield, 32145 West Lincoln Highway, Plainfield, Illinois 60544. For information, call 815/436-7093.

Entries are due on April 1 in the one-stage International Design Competition for the **Development of David's Island**, located in Long Island Sound. The sponsor is the College of New Rochelle. Registration before January 15 costs \$35 and \$50 thereafter. Jurors include Diana Agrest, Diana Balmori, Deborah Dietsch, Laurie Hawkinson, Michael Manfredi, and Bradford Perkins. Prizes totaling \$5,000 will be distributed among the winners, whose entries will be exhibited at the New Rochelle Castle Gallery. For a competition brief, call the gallery at 914/654-5423.

Reviews

A Critic Writes: Essays By Reyner Banham
Selected by Mary Banham, Paul Barker, Sutherland Lyall, and Cedric Price. Berkeley: University of California Press, 1997, 351 pages, \$40.

Reviewed by Thomas Leslie

Reyner Banham was best known for his seminal history of Modernism, *Theory and Design in the First Machine Age* (1960), a carefully argued survey of the relationship between 20th-century architecture and the technology surrounding it. He also wrote a series of brilliantly crafted books before his death in 1988, covering topics as diverse as the history of hvac (*The Architecture of the Well Tempered Environment*, 1969), the industrial landmarks of Buffalo, N.Y. and their relationship to European Modernism (*A Concrete Atlantis*, 1986), and a poetic ode to the American West (*Scenes In America Deserta*, 1982).

The reader of his books will discover a restless but precise mind, interested in buildings, objects, and systems both for what they are and what they represent. His books alone define him as one of the most pertinent observers of both 20th-century technology and architecture.

But Banham was undoubtedly at his best when writing short essays, which showcase his wry wit and love of language. From 1965 on, he was a regular contributor to the British journal *New Society*, a rare pulpit for a design critic to occupy.

Until the publication of *A Critic Writes*, only a few of Banham's short essays were available in collected form (in *Design By Choice*, 1981). It's great to find in one place some of the most incisive, witty, and even outrageous examples of architectural thought.

Banham's widow Mary, along with Paul Barker, Sutherland Lyall, and Cedric Price have done an excellent job of highlighting the critic's bibliography. Banham could range from insightful historian (for example, in an essay on the Greene brothers' Gamble House), to eccentric chronicler of the mundane (in a classic 1965 essay on "The Great Gizmo"), to self-appointed gadfly and spokesman for the man in the street (in "The Crisp at the Crossroads," a stocktaking on the status of the potato chip, written in 1970). All facets of this extraordinary mind are represented here.

Reading this collection, one senses Banham's grasp on the practice of architecture was broad enough to (*continued on page 197*)

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LOEWS THEATRES

(continued from page 196) understand that design extended beyond the typical critic's world. Indeed, the traditional essay on a single building is barely represented in this book. Instead, Banham's writing is valuable for its ability to expand our architectural horizons, allowing us to learn from the detritus of daily life. He was at times obsessed with both automobiles and aircraft, and was comfortable treating both as essentially architectural exercises.

Banham's breadth was such that there are inevitable gaps in this book. "A House is Not a Home," a 1965 essay on the growing mobility of domestic environments, for example, is glaring in its absence. Likewise, his prescient 1955 essay, "The Machine Aesthetic," which laid out the arguments for Postmodernism 20 years before its time, is not to be found here.

Banham's final essay, published after his death, though, is included in this book and deserves to be read by the entire architectural profession. Entitled "A Black Box: The Secret Profession of Architecture," it was a swan song that combined many of his deepest passions and most heartfelt messages—that architecture was a narrow slice of the world at large, that architects are chronically unable to see their work in a larger perspective, that the public deserves more than it often gets from us. Such unflinching criticism of a profession that Banham obviously loved dearly is a constant theme in this thought-provoking collection.

Omissions and Corrections

The map of the Grand Rapids area [RECORD, December 1996, page 29] should have been credited to Dennis McClendon/Chicago Cartographics. RECORD regrets the omission.

Credits for the Swatch Pavilion [RECORD LIGHTING, December 1996, pages 18-21] should have included the architectural collaboration of Eyecandy and exhibit-design consultants Eight, Inc.

Design credit for A Contemporary Theater [RECORD, December 1996, page 16] should have read Callison Architecture.

Anderson/Schwartz should have been credited as co-winner of the 1992 competition to design the Whitehall Ferry Terminal [RECORD, January 1997, page 45].

The dates for WestWeek [RECORD, January 1997, page 207] have been changed to March 19-20 and the new contact is Bret Parsons.

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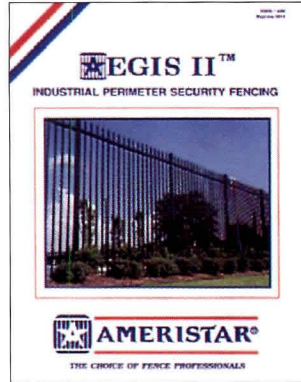
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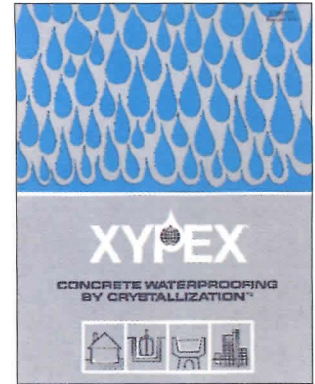


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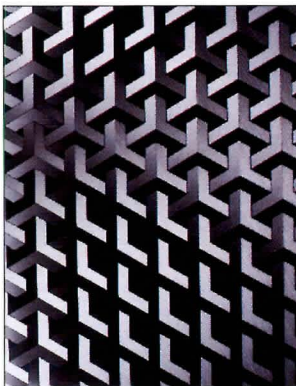


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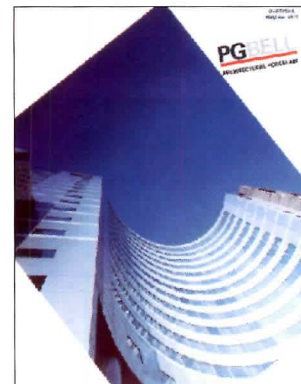


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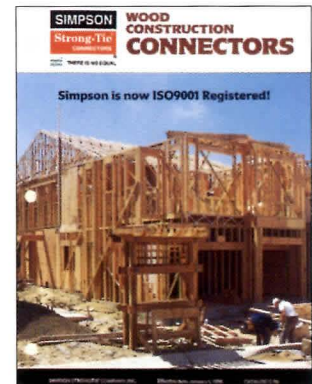


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CIRCLE 107 ON INQUIRY CARD

**12 New Products Featured
in 1997 Catalog**



12 new products are introduced in Strong-Tie's '97 catalog, Wood Construction Connectors. A necessary reference for structural engineers, building officials, and architects, it includes updated specs, load charts, application drawings, & building code acceptance - plus info on holdown anchorage design, & available custom hanger options. ISO9001 Reg. For 1997 catalog (C-97), write POB 10789, Pleasanton, CA 94588

Simpson Strong-Tie

CIRCLE 108 ON INQUIRY CARD

Accessible Lavatory Insulation

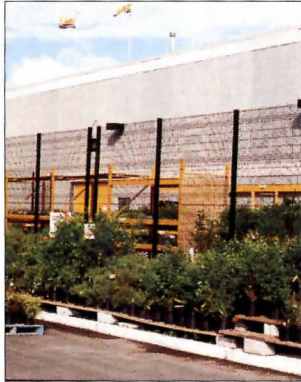


A full color catalog will explain the different Handy-Shield safety covers offered for the new or retrofit projects that need to comply with the American Disabilities Act. The specific use sample, sample specifications, drawings and color choice are all summarized in this easy to understand catalog. 800-475-8629.

Plumberex

CIRCLE 109 ON INQUIRY CARD

Fence Systems



This new aesthetically appealing Euro-design fence system combines see-thru good looks with strength and durability of 6-gauge galvanized steel mesh. Powder-coated in a large variety of colors to suit any design & enhance the appearance & security of any property it surrounds, this fence system is virtually unclimbable, rugged maintenance-free and easy to install. 1-800-836-6342. www.maniacom.com/omega.html

Omega Fence Systems

CIRCLE 110 ON INQUIRY CARD

New Fireplace Tested as a Wall Furnace

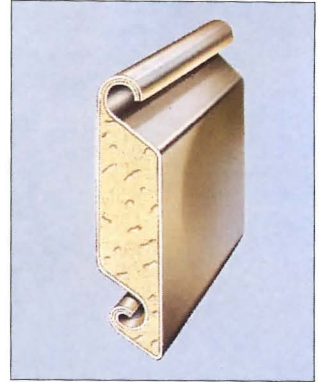


Heat-N-Glo Fireplace Products has taken its direct-vent technology and incorporated it into a new high performance fireplace. Model 6000 Supreme is a high efficiency fireplace (thermal efficiency up to 74%) and has a AFUE (Annual Fuel Utilization Efficiency) rating of 63%. Also, the 6000 Supreme is standard with a variable regulator to adjust the flame and BTU input with the turn of a dial. Heat-N-Glo, 6665 West Hwy 13, Savage, MN 55378, 1-800-669-HEAT.

Heat-N-Glo

CIRCLE 111 ON INQUIRY CARD

Atlas Door™ Thermal Slats

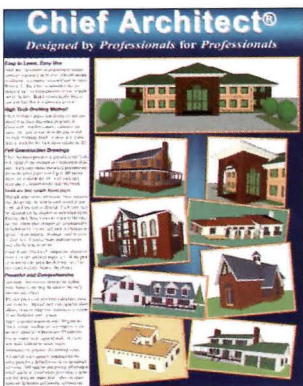


Atlas Door™ has set the standard by which all other thermal doors are measured. Unrivaled in quality and construction, Atlas Door's thermal insulated slats are pressure injected with environmentally safe polyurethane foam that expands and cures to prevent gaps and voids. Superior materials and engineering combine to offer the best thermal slat available in the industry today. R= 6.25. Call 800-959-9559.

Atlas Door™

CIRCLE 112 ON INQUIRY CARD

Advanced Relational Technology, Inc.

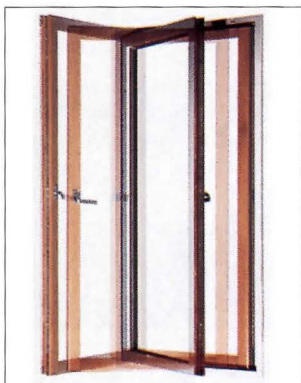


Proves that top quality architectural software can be easy to learn. Straight out of the box, Chief simplifies the process of creating full working drawings. Over 300,000 people worldwide prefer ART's architectural software with its full 3-D capabilities. Advanced Relational Technology, Inc. 3731 N. Ramsey Rd, Suite 150, Coeur d'Alene, ID 83814. Phone: (800) 482-4433, Fax (208) 664-1316 E-mail: artchief@chiefarch.com -WWW: www.chiefarch.com

ART

CIRCLE 113 ON INQUIRY CARD

New Casment Window from H Window



Features an aluminum exterior, wood interior & the ability to rotate 180° for easy cleaning. Avail. with total choice of exterior colors, interior finishes, & wood species. Casements are inherently weak, due to the lower hinge & handle mechanism supporting all the window weight. The patented hinge hangs the majority of weight from the top hinge guide, allowing for larger windows. 1324 East Oakwood Dr., Monticello, MN 55362.

H-Window

CIRCLE 114 ON INQUIRY CARD

Raymond Ekeboll Designs © 1996

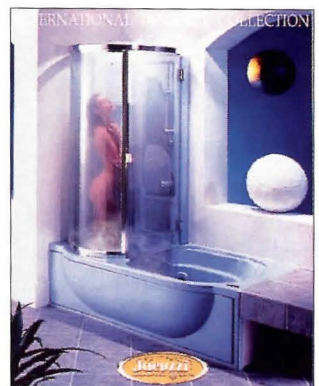


Crafts an extensive array of Architectural elements carved in solid woods. 104 pg. Color Product Catalog, shows a selection of capitals, corbels, moldings, onlays, panels etc. Stacked in Maple & Red Oak, avail. for immediate delivery. Spiral Bound catalog \$20, binder version \$30. Visa & MC welcome. Brochure avail. Raymond Enkeboll Designs 16506 Avalon Blvd. AR27 Carson, CA 90746 P:(310) 532-1400 F:(310) 532-2042.

Raymond Enkeboll

CIRCLE 115 ON INQUIRY CARD

Jacuzzi Whirlpool Bath

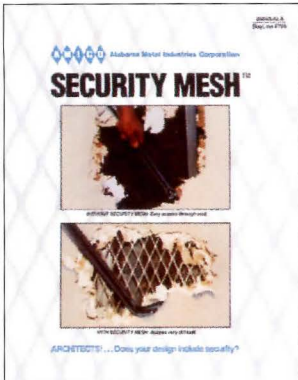


Jacuzzi Whirlpool Bath - presents The 1997 International Designer Collection of whirlpool baths, faucety and The J-Dream™ Family of shower systems. This full-color catalog features beautifully styled products, integrating the most innovative luxury features. For more information please call 1-800-678-6889. Catalog free of charge.

Jacuzzi

CIRCLE 116 ON INQUIRY CARD

Security Mesh

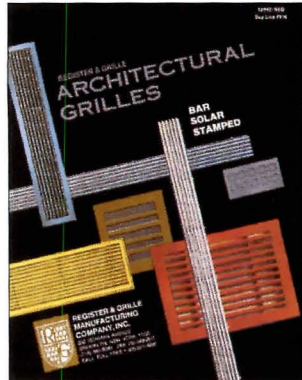


Security Mesh sheets are steel mesh panels used as a penetration resistance shield behind drywall finishes. Sheets are to be attached to metal studs & track or wood supports designed for use in walls. Uses: Prisons, gov't offices, strip malls, storage rooms, computer rooms, courthouses, apartments, condos, pharmacies, mail rooms, airport security, banks, hospitals, police stations & office security.

Amico

CIRCLE 117 ON INQUIRY CARD

Decorative Grilles



Unusual visual effects emerge when our grilles are designed for area effects. Versatility is the theme. R&G offers architects and interior designers many ways to express the changing forms of metal with the integrity of R&G's architectural grilles. Custom or standard finishes are available plus any grille can be made in matching color to blend with your decor. 202 Norman Ave., Bklyn. NY 11222. 800-521-4895. Fax: 718-349-2611.

Register & Grille Mfg., Co.

CIRCLE 118 ON INQUIRY CARD

Buckingham-Virginia Slate

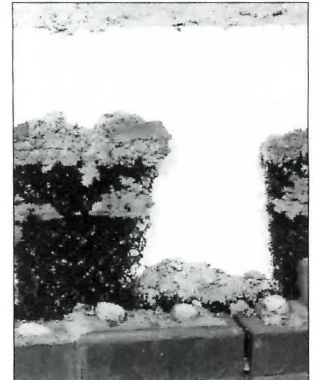


has been sheltering America for over two centuries. As a roofing material, it is prized for its high mica content, natural cleft and texture, as well as its non-fading and distinctive handmade quality. Because of its permanence and natural beauty, it was specified by Thomas Jefferson in the 1800's and remains today the roofing choice of eminent architects. P.O. Box 8, Arvon, VA 23004. Tel: 1-800-235-8921.

Buckingham-VA Slate

CIRCLE 119 ON INQUIRY CARD

The Mortar Net™

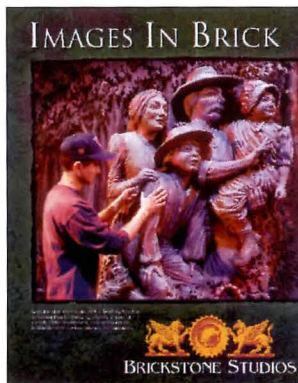


The Mortar Net's™ patented dove-tail cut prevents weep holes from clogging due to mortar droppings. It is available in sizes to fit a variety of cavity wall dimension. All are made from non-degradable polymers and are easy to install. The Mortar Net™ was invented by Tom Sourlis, a masonry restoration expert with over 25 yrs of experience restoring damaged masonry. To request a CAD disk of wall details, call (800) 644-6638.

The Mortar Net™

CIRCLE 120 ON INQUIRY CARD

Award Winning Brick Sculpture

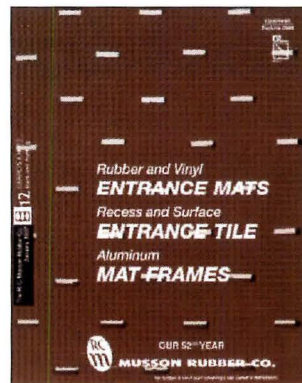


For maximum impact and appeal, crown your work with a signature art piece from Brickstone Studios. Applications of brick or cast stone sculpture are unlimited - exterior and interior murals designed to bring architectural focus to entrances, foyers, facades and imagework. Quality craftsmanship and design are distinguishing services our company guarantees. 800-449-6599.

Brickstone Studios

CIRCLE 121 ON INQUIRY CARD

Designed for Safety

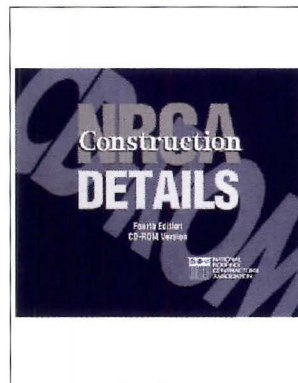


Brochure details our selection of quality entry matting. Musson has the exp. to guide, ability to customize, & facilities to produce surfaces or recess entrance mats that meet your needs. Samples are made of rubber, vinyl & olefin carpet-like fibers. Others include fluff cord & traffic entry tiles, alumn./vinyl roll-ups mats & alumn. mat frames., Musson Rubber Co. P.O. B. 7038, Akron, OH 44306. 1-800-321-2381. F.: 1-330-773-3254.

Musson Rubber

CIRCLE 122 ON INQUIRY CARD

NRCA Construction Details on CD-ROM

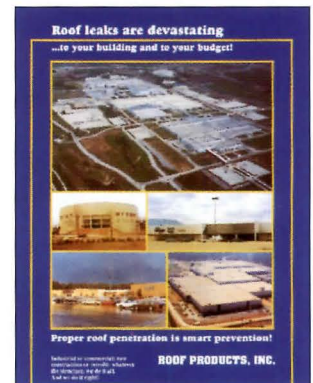


This CD-ROM contains more than 350 build-up, modified bitumen, single-ply, metal, sprayed polyurethane foam, and waterproofing roofing construction details. With compatible CADD software, you can select, view, modify and print details to fit your specific project needs. The CD contains both drawing .DWG and drawing exchange .DXF files.

National Roofing

CIRCLE 123 ON INQUIRY CARD

Roof Penetration for New & Retrofit



Before you purchase or specify rooftop equipment, contact Roof Products, Inc. They have the knowledge, experience and the technical staff to analyze the project and determine the best applications for a leak-free, cost-efficient job. RPI will supply the solution and the curbs, adapters, and other accessories to change equipment without distributing the roof or sub-structure. For brochure 800-262-6669.

Roof Products, Inc.

CIRCLE 124 ON INQUIRY CARD

Tufflex Flooring Durability



Ice blades & high traffic areas are no match for Tufflex. Made of highest quality rubber in 3/8"-thick, 27" sq tiles. For areas exposed to weights, heavy machinery, golf spikes & ice blades. Resilient & durable, excellent traction, easy maintenance, epoxy-bonded to the sub-floor to form a seamless, sanitary surface. Tufflex has evolved into an all-purpose floor found in 100's hockey & ice skating arenas. 1-800-543-0390.

Tufflex Flooring

CIRCLE 125 ON INQUIRY CARD

Balustrades & Columns

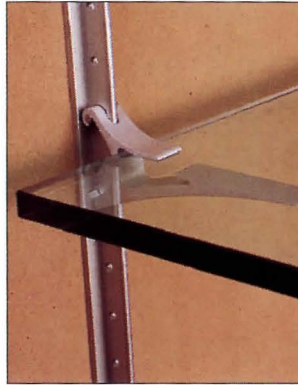


Melton Classic proudly introduces maintenance-free Marble Tex™ synthetic stone balustrades with integral color and lifetime warranted columns. Other quality column products from Melton Classics include: Classic™ Redwood, Hardwood™ Stain Grade, DuraClassic™ Poly/Marble, FRP Classic™ Fiberglass. For more information, see our Sweet's Catalog (06400Mel), Call 800-963-3060 or Fax 770-962-6988.

Melton Classics

CIRCLE 126 ON INQUIRY CARD

Parallel Design Partnership Limited



"ellen's brackets", an anodized-aluminum shelving system designed by M Ali Tayar, provides an elegant alternative to existing bracket-and-track systems. Cantilevered brackets come in two sizes, for shelves 3/4 or 3/8-in. thick and 10-in. deep. Wall-mounted tracks permit 1 1/2-in. adjustment of wood, glass or plexiglass shelves. For more info phone Parallel Design Tel: 212/989-4959 Fax: 212/989-4959.

Parallel Design

CIRCLE 127 ON INQUIRY CARD

Miller Manufacturing



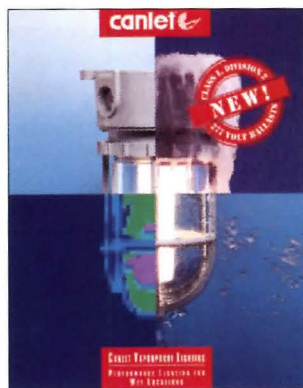
Miller has over 25 yrs of exp. in the field. The Silent Servant® dumbwaiters featured extruded 6063-T alumn. guide rails to guide the car & counterweight. They also incorporate acetal copolymer (Delrin®) guide shoes for the car & counterweight for strength & min. friction. Ideal for transporting items from one floor to the next. Trouble free service with min. maintenance. Miller offers Silent Servant® in 5 std. sizes & 3 opening styles with capacities from 50-lbs.-250-lbs.

Miller Manufacturing

CIRCLE 128 ON INQUIRY CARD

RECORD HIGH-lights

Canplas Industries Ltd.



Canplas's 8 page full color catalog details the line of incandescent and energy efficient compact fluorescent vapor-proof fixtures. These products feature non-metallic construction, energy efficient cold temperature electronic ballasts and UL Marine listing. Other features also available include a prismatic polycarbonate reflector, a line of colored globes and Class I, Div. 2 approvals. Call 1-800-461-5300

Canplas Industries Ltd.

CIRCLE 130 ON INQUIRY CARD

Hanover Lantern Commercial Lighting



Hanover Lantern designs & manufactures high quality heavy duty cast titanium/aluminum commercial grade decorative lighting fixtures, poles & accessories. A selection of design styles, light source options, light distribution systems, mounting options, computer generated photometric data plus a custom design service are available to the architect or engineer. 470 High St., Hanover PA 17331. Phone 717/632-6464, fax 717/632-5039

Hanover Lantern

CIRCLE 131 ON INQUIRY CARD

The "ID Series"

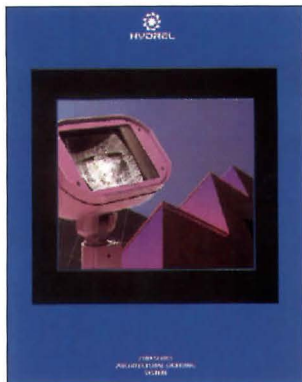


The "ID Series" is specifically designed for lighting Computer Environments with 8' ceilings where low reflector brightness is essential. Enjoy the comfort of indirect light with nothing below the ceiling plane. The precisely stepped and formed reflectors in our new "ID Series" provide revolutionary glare control. The 2'x2' and 2'x4' fixtures utilize efficient, long life 40, 50, or 55 watt Biax fluorescent lamps. Call 818/579-0943.

Engineered Lighting

CIRCLE 132 ON INQUIRY CARD

High Performance with Uniformity and Control



Hydrel's 7100 Series Architectural Lighting System provides high performance with maximum uniformity and control. Eight standard light distributions. Standard internal glare control. Multiple mounting capabilities. Contemporary styling to complement and architectural statement. Up to 175 watts HID.

Hydrel

CIRCLE 133 ON INQUIRY CARD

Low Voltage Accent Lighting



Tortran, Inc. presents the EXOTRACK™ low voltage halogen lighting system. Straight, rolled into circles, or shaped into undulating forms, the Exotrack provides accent and illumination for miniature chandeliers, exciting free-form sculptures, and can even be suspended in space. For more information call 203/367-5188

Tortran, Inc.

CIRCLE 134 ON INQUIRY CARD

Lexington Aluminum Lighting Standards



Cost-effective durable, attractive, & strong describe Lexington Standard's alum. lighting stds. Models include round tapered/ straight /decorative, square, hinged, & embedded. The wide range of finishes & colors appeals to architects; contractors appreciate the ease of installation; distributors are attracted to the economical prices; owners enjoy a product that's virtually maintenance-free.

Lexington Standard

CIRCLE 135 ON INQUIRY CARD

Vector

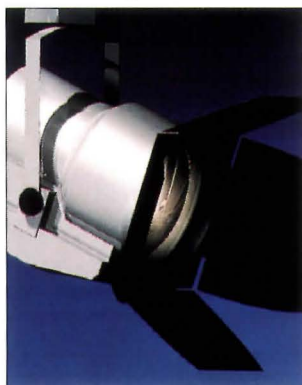


The strong sleek lines set this series apart from all the rest. The Vector can only be defined by its magnitude and direction. Fixtures sport a new smooth acrylic cone in a variety of materials. The series is available in a variety of diameters, metal finishes and lamping. The Original Cast Lighting Inc. 6120 Delmar Blvd. St. Louis, MO 63112 Tel 314/863-1895 - Fax 314/863-3278.

The Original Cast Lighting

CIRCLE 136 ON INQUIRY CARD

Inlite's "Comet" Hid Light Fixture

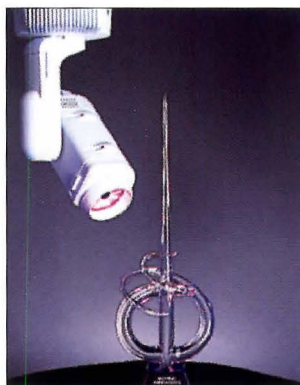


Great color rendition (4100K). Superior light output (up to 28,000 candlepower). Multiple accessories (barn doors, color filters, louvers). Two wattages to choose from 35PAR30 and 70PAR38. Energy efficient with many rebate opportunities. All kinds of mounting possibilities track, canopy, 1 1/2" - 3/4" - 1" truss or beams, and C-Clamp. Custom colors available. For more information call 1-800-346-5932, Fax 510/849-3230.

Inlite Corp.

CIRCLE 137 ON INQUIRY CARD

The AR5™ Interior Luminaire by IRIDEON



Irideon's AR5™ Interior Wash Luminaire awarded Best New Product of the Year at Lightfair Int. 1996. It features a computer-controlled, dichroic color-changing assembly, robotic 360° pan & 270° tilt capabilities, & diffuser/douser option. Control is achieved w/ Irideon Composer™ Control System allows system config. & programming from a PC. Irideon, Inc. 201 Regal Row, Dallas, TX 75247. R(214)819-3208, F(214)630-5867. www.irideon.com

Irideon

CIRCLE 138 ON INQUIRY CARD

"Ultra Life" Series of MR16's



USHIO INTRODUCES LONG LIFE 12V-50W/EXN AND 12V-75W/EVC LAMPS FROM THE NEW "ULTRA LIFE" SERIES OF MR16'S FOR GENERAL ILLUMINATION.

Owing to advancements in filament design and halogen fill technology, this series offers twice the lifetime of standard MR16's. At 10,000 hours average, "Ultra Life" lamps provide obvious benefits in applications where frequency of lamp changes are a consideration, joining Ushio's already extensive line of specialty MR16's for interior and exterior lighting. Phone: 800/218-7446.

Ushio America, Inc.

CIRCLE 139 ON INQUIRY CARD

Cast Aluminum Lighting



Sun Valley Lighting manufactures an extensive line of Standard & Custom cast aluminum lighting poles & fixtures in all period styles. Our 50 years of design & manufacturing experience provides you with unexcelled product quality. Our staff of designers, engineers, & tool makers are here to assist you. Our in-house foundry assures quality & prompt delivery at competitive costs.

Sun Valley Lighting

CIRCLE 140 ON INQUIRY CARD

BILCO

Worldwide Source For
Specialty Access Solutions

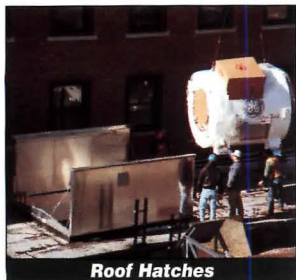
Built to the Highest Standards

The BILCO Company has been a leading manufacturer of specialty access products since 1926.

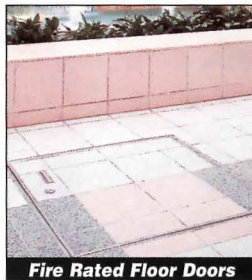
Our solid reputation for quality and value has made us the product line most specified by architects around the world.



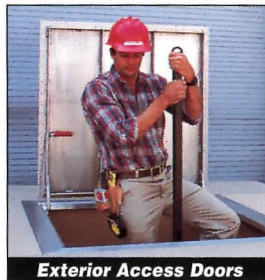
Interior Access Doors



Roof Hatches



Fire Rated Floor Doors



Exterior Access Doors



Automatic Fire Vents



Bilco®

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CIRCLE 84 ON INQUIRY CARD



**AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION**

**Telecommunications Infrastructure; questions on page 214.
To receive CES Credits, fill in Self-Report Form**

Answers:

- 1.** This design helps minimize network disruption from system failures, offers flexibility, and permits competing telecommunications companies to offer services within the building, lowering prices.
- 2. a.** Architect should provide at least two service entries into the building for wire connections; **b.** include multiple risers where rings extend from floor to floor; and **c.** leave space for multiple WAN systems' equipment in telecom closets and service-entrance conduit banks.
- 3.** 1996 TSB-75 minimizes rewiring when office layouts change or personnel change. It is well-suited to access-floors, but these have higher initial costs. Mounting multi-user boxes to columns or walls is usually undesirable because it may leave wiring exposed. System administration, troubleshooting, and maintenance are more complex, and system-transmission capacity may be less than that of conventional methods, limiting future improvements when greater bandwidth capacity is needed.
- 4.** A wireless approach is best suited for building types whose users require high portability and mobility and have a relatively low data demand. This technology requires antennas with associated wire path-

ways in ceilings and materials that won't hinder radio transmission. In addition, architects may have to design for antennas outside of buildings, five or six stories up. A wireless approach may suit historic preservation and adaptive-re-use projects, particularly in buildings where long wire runs would otherwise be required.

5. Major improvements in access flooring and cabling have resulted in thinner floor tiles with a more solid feel and significant reductions in depth—now commonly four in. Access-floor voids are being used for cable distribution and air ventilation. Underfloor ventilation can be used in conjunction with ceiling-panel radiant heating and cooling systems. Access floors cost more than other systems and present a range of logistical problems, but they are more flexible than cellular floors or poke-through concepts.

6. High-performance cable is more delicate, requires pathways that accommodate soft bends and multiple access points, and needs pull-boxes at frequent intervals. There are conduit and separation requirements between power cables and fluorescent fixtures. Ceiling- and wall-based distribution concepts may offer the flexibility that most clients need.

7. Many new "smart" devices are being added to buildings, and some will need connections to a building-wide control system, increasing wires, contact points, sensors, and so on.



AIA / CES SELF-REPORT FORM

(Use to report learning units earned for Architectural Record only)

Member information:

Last Name _____ First Name _____ Middle Initial or Name _____

AIA ID Number _____

Program/project title: Architectural Record (02.97)

Check the following as applicable.

- "Specifying Wood Windows and Doors" (sponsored section provided by the NWWDA, page 121)
- "How Do We Wire the Ever Changing Office?" page 173)

Completion date (M/D/Y): _____ / _____ / _____

Quality Level (QL) of this program: Each article will give you a total of 2 LUs at Quality Level 2. Completing both sections earns 4 LUs.
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CIRCLE 85 ON INQUIRY CARD

THE FUTURE: New Ways to Move People Around Really Big Buildings

— JOAN BLATTERMAN

The Future this month looks at how people might circulate across a super-big site or within skyscraping mega-structures, such as the high-rise villages being built in cities like Kuala Lumpur, Kobe, and Jakarta. Emerging technologies promise to solve some of the economic and human challenges imposed by travel within the vastness of self-contained cities-within-cities now gleaming in developers' eyes.

The basic structural problems of the ultra-tall building were solved long ago. Frank Lloyd Wright's dream of a mile-high building—his steel-cored Illinois scheme of 1956—is achievable using today's structural components and engineering. But architectural challenges remain, along with programmatic issues FLW never imagined. Twenty-first century design, security, and life-safety concerns prompt a new look at transportation in the context of mega-buildings.

Experts say there is no realistic way to speedily evacuate buildings of over 60 floors. [It took the writer's 20-year-old son about 1 3/4 hours to clamber down the smoky fire stairs from his 100th-floor office when New York's World Trade Center was bombed.] Ultra-tall structures must address life-safety with places of refuge—pressurized, fire-protective areas—which will shield occupants during fire fighting.

Another design constraint: the combined physical and physiological difficulties of ultra-high-speed elevators. Human perception of the discomforts of rapid acceleration—the Jerk Rate—limits how quickly elevators can get up to speed in the

real world. The fastest elevators now in use, in Japan, move at a rate of 40 ft per second. But it takes about 20 floors to get up to that speed—and 20 floors to decelerate before stopping. That's wasting a lot of shaftway. And the longer the single shaft, the more pronounced the effect of building sway, slowing car speed, and alarming passengers.

Despite its life-safety and people-moving challenges, the super-big building can be seen as environmentally advantageous: a compact, landscape-saving footprint that accommodates the working and living requirements of thousands of people.

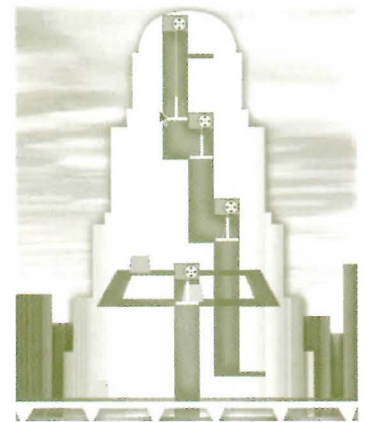
So what's up, elevator-wise? A Japanese manufacturer is addressing super-high problems using magnetic levitation to correct for minute deviations in elevator guide rails, preventing any physical discomfort associated with vibration and eliminating all sensation of speed in the car itself.

Switzerland-based Schindler, number two world-wide, proposes that the most coherent solution to high-rise traffic handling is to make it attractive for workers and residents to stay within the building envelope as long as possible (eliminating the mind-boggling difficulties of getting 120,000 people down to the first floor for lunch every day.) Schindler wants to create an intra-building "taxi" system, offering quick communication between different functional zones. This would let a high-rise occupant shuttle from his 18th floor office to an 80th floor apartment, then on to a restaurant on 160, using a series of sky lob-

bies. Currently in development for a 1998 release, their approach might "let go of the rope," detaching the elevator car from the counterweight. Individual "cars" within shaftways are intended to be self-propelled (no one is saying how yet), permitting stop and start flexibility. Addressing the super-tall structure as a stack of 30-story-high buildings, Schindler aims for a "vertical escalator" that lets people get on and off at will within a zone of "local" floors.

But market-leader Otis is looking at existing technology to make a passenger system that combines vertical and horizontal travel: the sideways elevator. In March, this division of United Technologies will unveil a working prototype called Odyssey. Otis says it will vastly improve the economics of the super-tall building by using hoistway space more efficiently, synchronizing technologies and electronic car-dispatch devices proven safe and effective in moving people around airports and other large areas into an integrated system.

As devised, the Odyssey transport/elevator will let a passenger cab (Otis calls it a Transitor) go from a remote parking garage, traverse the site and enter the building, then rise over 200 stories. Instead of passengers getting out at sky lobbies, then moving to another bank of elevators to take them farther up, the car itself moves over and up. Because this "sideways" capability lets a car get out of the way, several Transistors can use a single shaftway, greatly saving floor space. Assembling the core presents no problem structurally. The dual-shaft-



Transitors move sideways as well as up and down in the Odyssey system.

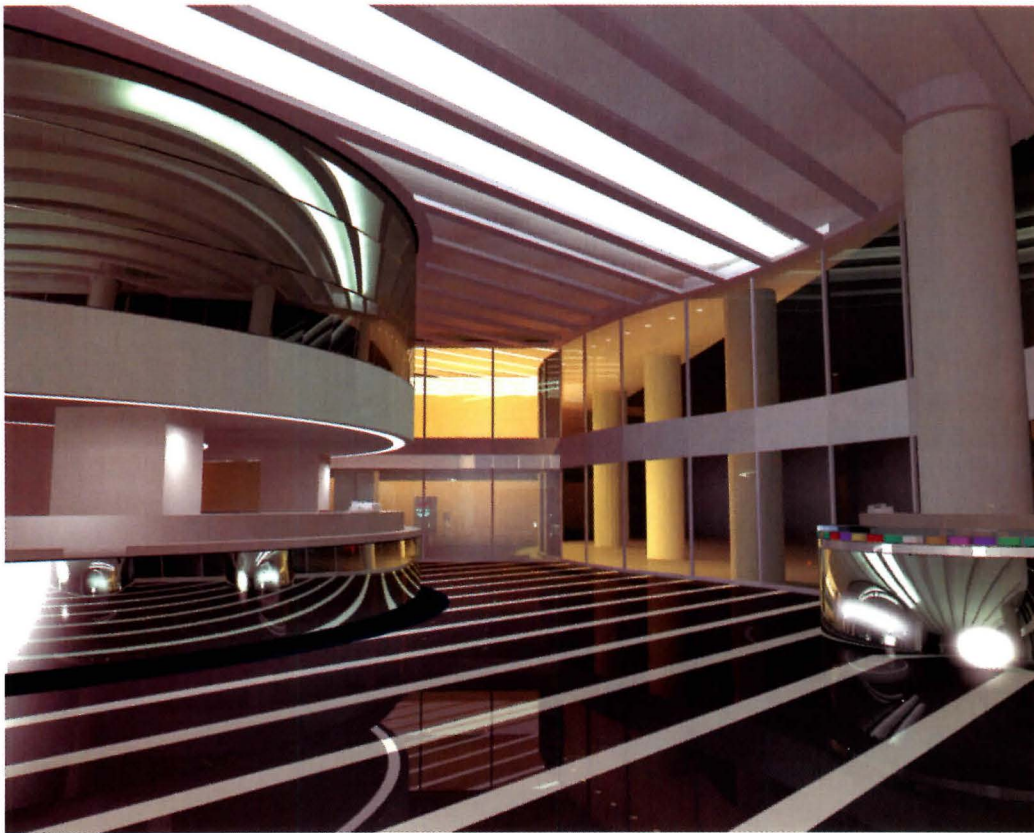
way configuration envisioned lets the cars themselves act as counterweights, balancing the system. The architectural program is more interesting, as passengers will find changes from vertical to horizontal and acceleration periods disturbing if they don't know what is about to happen. The prototype will have glass windows that become opaque electronically as the cab leaves ground level and moves vertically.

Candidates for Odyssey, Otis says, are buildings of no fewer than 80 stories or that have two sky lobbies; a multiple-use building needing lots of express and local zones; or one with high occupancy and a very large footprint, where users must travel long distances and go to different levels. A 200-floor building would have five travel legs; it will take only 2 1/2 to 3 minutes to go from ground to top. Call 860/676-6000 for a neat, free CD-ROM showing cars in motion, or hit www.otis.com (Web page). ■

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